Ontario

Ontario Energy Board

In the matter of a
Reference respecting

Ontario Hydro

H.R. 17

REPORT OF THE BOARD

Volume 1

Ontario

Ontario
Energy
Board

Commission
de l'Énergie
de l'Ontario

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August 31, 1988

The Honourable Robert Wong
Minister of Energy
12th Floor
56 Wellesley Street West
Toronto, Ontario
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Dear Mr. Minister:

In accordance with your letter dated April 19, 1988, the Ontario Energy Board conducted hearings to investigate, examine, and report on the proposal of Ontario Hydro, dated April 18, 1988 to change its bulk power rates effective January 1, 1989.

The report of the Board is hereby respectfully submitted.

ONTARIO ENERGY BOARD

Mervin Daub

Mervin A.C. Daub,
Presiding Member

Malcolm Jackson

Malcolm Jackson,
Member

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1. INTRODUCTION

1.1 A Preface

This report has been prepared by the Ontario Energy Board (the OEB or the Board) pursuant to Section 37 of the Ontario Energy Board Act (the Act). According to that section (reproduced in its entirety in Volume 2, Appendix A of this report), if Ontario Hydro (Hydro or the Corporation) wishes to change its rates, it is required to file its rate change proposal with the Minister of Energy (the Minister). The Minister is required, in turn, to forward the proposal to the Board so that a public hearing may be held to consider it. A report (Hydro Report or HR) is returned to him containing the Board's recommendations concerning the proposal.

On April 18, 1988, Hydro sent a letter to the Minister in which it stated that as of January 1, 1989, it intended to raise its average wholesale rates by 5.5%. On April 19, 1988, the Minister forwarded the proposal

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to the Board by way of a letter, a copy of which is included in Appendix B of Volume 2. As a result, the Board held a public hearing; and is reporting to the Minister in writing by August 31, 1988.

The hearing, details of which are contained in Chapter 14 and in Volume 2 of this report, began on May 16, 1988, and concluded on June 30, 1988. Various parties attended to hear the evidence of Hydro and other witnesses, and in many instances cross-examined those witnesses.

The Association of Major Power Consumers in Ontario (AMPCO), which represents most of the large industrial users of electricity, and the Municipal Electric Association (MEA), which represents over three hundred municipal commissions which buy electricity from Hydro, were present. So too were the Consumers Association of Canada, Ontario Chapter (CAC), Energy Probe, and The Independent Power Producers of Ontario (IPPSO), among others. Board Staff actively participated as well.

This report is the result of these proceedings and the deliberations of the Board. The Board's recommendations are summarized in Chapter 2. Chapter 3 provides some perspective and historical background.

Three chapters on demand considerations, and six on supply, follow. The new rate structure agreement proposed this year by Hydro is reviewed in Chapter 13, and the Report concludes with details of the hearing, and cost awards to the parties, in Chapter 14.

In this report, the Board makes the general recommendation that the appropriate average all-customer bulk power rate increase should be 5.8% instead of the 5.5% proposed by Hydro.

1.2 Jurisdictional Concerns of the Ontario Energy Board with Respect to the Hydro Reference

Last year, the Board was concerned that the Minister had restricted the scope of the Board's review of the bulk power rate change proposal. This year the Board notes that the Minister has once again done so, notably with respect to net income policy. The Minister stated that:

> As the recommendations relating to net income policy contained in the previous report on 1988 rates are still under review by the Government, the use of a market-based rate of return as a means of planning net income should not be re-examined.

An older restriction on an investigation of Hydro's system expansion (capital) plans was also continued.

While the Board has abided by the Minister's guidance (see Chapter 11 on Net Income), it must emphasize it continues to be concerned about the nature of such restrictions, and requests that attention be given to amending the Act to clarify the basis in law on which the Board is required to hold a hearing.

In HR 16, the Board had a second concern dealing with the same section of the Act, namely whether it could examine matters that may not directly influence the rate year but which, the Board believes, ought to be considered in order to properly assess the rate proposal.

In noting this concern at that time, the Board was motivated in part by procedural difficulties sometimes raised by Hydro through its Counsel, and also by what the Board, and others, considered was the original intent of Section 37 of the Act, which appears to suggest a broader consideration of Hydro matters. The Board has expressed concern that its findings in these reports should have a significance that justifies the considerable cost of the hearings.

This year the Board made a substantial effort to increase the cost effectiveness of the hearing by reducing the hearing time, organizing more pre-hearing conferences to settle the issues to be addressed, streamlining the procedure, appointing panel members with experience in Hydro matters, and so on. Parties to the hearing also made important contributions in this regard.

As it was, Hydro pre-filed over 5,000 pages of material, which, along with other filings, exhibits, and the testimony of 32 witnesses for Hydro and 12 for other parties, constitute the record for the proceeding. The hearing itself took four and one-half weeks to conclude and created a written transcript of 4,140 pages. After written final arguments were submitted, the panel of the Board reviewed over 7,000 pages of evidence, 200 exhibits, and almost 800 pages of argument in order to prepare this report.

Hydro has submitted that the review was "detailed and thorough", and that Hydro had been "well tested". However, the Board's hearings are the only regular arm's length examination of this publicly-owned utility, and the Board shares the view of certain parties to the hearing that the limited time available between receipt of the Minister's letter and the deadline of August 31 required by the Act makes it impossible to examine in appropriate detail many aspects of Hydro's activities, some of which may involve huge sums of money. The question of power purchases is a case in point, but there are many subjects such as the borrowing program, decommissioning, and the proposed scrubber program.

The Board considers that clarification is needed as to whether the Act should be changed to provide more time to examine all matters, including those which do not directly influence the rate year in review, but which the Board believes ought to be considered in order to properly assess the rate proposal, or whether a series of individual hearings on special topics of importance should be referred to the Board.

Failing that, the Board is inclined to make broader use of the jurisdiction given it under subsection 37(7) of the Act, which, it will be recalled, says:

> 37(7) The Board may at any time give directions as to the nature and extent of interventions by persons interested in a matter that is to be the subject of a public hearing held pursuant to this section, may set aside for future examination any issue that in its opinion requires a more prolonged examination and may make interim reports pending its final report with respect to the subject-matter of any reference.

In other words, the Board would file an interim report on rates to satisfy the August 31, 1988, deadline, and would reserve certain topics to be dealt with in detail at a series of hearings throughout the year. The Board recognizes the cost, as well as the time, which such a series of hearings would involve for all concerned. However, the Board believes it essential that since these matters are all rate-related, they should be examined in much greater detail than has been the case to the present.

1.3 The Question of Accountability

The concluding point of the previous section really speaks to the issue of the "accountability" of Hydro, and its role in Ontario public and corporate life. This subject has been of concern to the Board for several years and is one which was raised at various points in this year's hearing as well.

Clearly there is a range of opinion on the matter. Some, such as the President and Chairman of the Board of Hydro, Mr. Franklin, argue that the present structure of accountability "has served this Province well"; others argue that Hydro should not be used by the Government of Ontario for "social engineering". Both IPPSO and the MEA reflected at some length in their respective arguments about the question but came to quite different conclusions.

The Board is cognizant of the initiatives introduced by Mr. Franklin, in particular the external review of Hydro by Cresap, a management consulting firm. Some may feel that these initiatives adequately address the question of accountability. However, the Board remains concerned about the apparent institutional inertia at Hydro and questions whether reforms are deeply-rooted, in short whether there has as yet been, as Hydro puts it in its Final Argument, "a transition to a more productive Corporation". The Board questions whether there is a real willingness to make hard decisions. Will "heads roll", as they would in the private sector, when there is a Darlington overrun or when in-service target dates are missed for reasons management could have controlled? Will personnel actually be reduced by out-placement or early retirement programs and not simply by attrition?

As a result of these considerations, the Board urges the Government of Ontario to keep open its options regarding the proper accountability of Hydro when formulating amendments to both the Power Corporation Act (PCA) and the Ontario Energy Board Act as it pertains to Hydro. No doubt the newly-constituted Select Committee on Energy will contribute on this issue as well. What is required is a firm and clear statement by the Government of Ontario of its policy with respect to Hydro.

2. SUMMARY OF RECOMMENDATIONS

2.1 Introduction

The Board's Report is based on information that is more up-to-date than that which was available to Hydro when it announced its proposed 1989 average all-customer rate increase of 5.5%.

Hydro's rate proposal was based on the following net revenue requirement:

Gross Revenue Requirement	$6,136 million
Secondary Sales	(194 million)
Net Revenue Requirement	$5,942 million

The Board in this Report recommends instead the following net revenue requirement:

Gross Revenue Requirement	$6,392 million
Secondary Sales	(220 million)
Net Revenue Requirement	$6,171 million

The average all-customer rate increase needed to meet this revenue requirement is 5.8%.

Tables 2.1 and 2.2 at the end of this chapter provide the specific details of the calculations of this net revenue requirement recommendation, and the calculations giving rise to the resulting rate increase.

2.2. Specific Recommendations

In his letter dated April 19, 1988, the Minister asked the Board to structure its recommendations so that Hydro could act directly on the revenue requirement and the resulting rates in accordance with its responsibilities under the Power Corporation Act (the PCA), and so that the Minister could consider separately such other recommendations as the Board may make. Accordingly, the specific recommendations, classified and summarized, follow. Details supporting these recommendations appear in the appropriate section.

2.2.1 Recommendations Relating to the Proposed Revenue Requirement

Recommendation 5 (p. 5/6)

> The Board recommends that the load growth forecast for 1989 be adjusted upwards by one percentage point to 3.7%.

Recommendation 9 (p. 5/11)

> The Board recommends that Hydro's revenue projections for secondary sales for 1989 be increased to $220 million from the updated level of $204 million.

Recommendation 17 (p. 7/6)

> Anticipating that the final report from the management consultants at Cresap will not differ materially from the preliminary findings, and believing that added challenge and discipline is required with respect to the OM&A budget, the Board recommends a $30 million overall decrease (i.e. 13%) in the proposed OM&A budget increase for 1989 of $226 million.

Recommendation 26 (p. 8/5)

> The Board recommends conservatism in forecasting hydraulic production for 1989. It suggests that Hydro adopt a forecast no higher than approximately that which it used for 1988, i.e. about 35 TWh.

Recommendation 27 (p. 8/7)

> Because of the expected reduction in hydraulic production, the Board recommends that Hydro's production of fossil-fuelled generation for

1989 be increased to 34.9 TWh. This will add $32.6 million to the revenue requirement.

Recommendation 32 (p. 9/21)

Consistent with its stated policy for major components of generating stations, the Board recommends that Hydro revise its depreciation policy to require that pressure tubes be retired at the end of their useful service lives. The impact of this revision for 1989 is to increase the pressure tube depreciation expense by $2 million and the provision for fuel channel removal expense by $20 million.

Recommendation 35 (p. 10/6)

The Board repeats its recommendation to the Minister made in HR 16, namely that Hydro be required to pay the Province of Ontario each year for the value of the province's guarantee of Hydro's debt. The Board estimates that the payment, updated for 1989, should be $25 million. It has adjusted the revenue requirement accordingly.

Recommendation 38 (p. 11/11)

Without re-examining market-based approaches to the cost of Hydro's equity capital, and relying on its previous examinations of the concepts and methodologies which should be used to determine net income as well as the submission of parties this year, the Board recommends adoption of Hydro's proposed level of net income for 1989 ratemaking, as updated, i.e. $741 million.

2.2.2 Other Recommendations for Hydro

Recommendation 1 (p. 4/6)

The Board recommends that a) more explanation should be given when estimating the impacts on revenue requirements of deviations from Hydro's economic forecasts; and b) in future hearings such impacts should be presented at one place in the evidence, and be consistently referenced therein.

Recommendation 2 (p. 4/6)

The Board recommends that Hydro be required to integrate explicitly the results of its FTA impact study with its load forecast, and its cost projections, and to present this information in next year's rate submission. The Board welcomes Hydro's offer to keep the Board apprised of developments in this area and would, therefore, expect to review the effect of any aspect of the Agreement at a future hearing.

Recommendation 3 (p. 4/9)

The Board recommends that Hydro establish an internal Free Trade Task Force, made up of representatives from all branches, to monitor and manage the FTA impacts as they develop.

Recommendation 4 (p. 5/2)

For this report, the Board accepts the traditional terminology of "primary" and "secondary" sales. For future hearings it recommends that more appropriate sales classifications be adopted.

Recommendation 6 (p. 5/9)

The Board recommends that the following technical changes be made to the load forecasting approach:

a) Hydro identify explicitly in its primary load forecast, by year, exactly what adjustments have been made for such major factors as non-utility generation, energy management programs, and the impact of free trade; and

b) Hydro expedite the process of introducing End Use models of electrical consumption so that they will be available to help evaluate the impact of the new energy management programs, among other things.

The Board also recommends that Hydro prepare a report for HR 18 which explains in detail what role the pricing of electricity plays in forecasting load using Hydro's forecast rate increases, together with an explanation of sensitivity analysis which Hydro has performed.

Recommendation 7 (p. 5/9)

The Board recommends that Hydro instruct Cresap to examine the linkages of the Economics and Forecast Division with the rest of the Corporation.

Recommendation 8 (p. 5/10)

The Board recommends that Hydro itself investigate whether more can be done to provide the Board with reasonably up-to-date and consistent economic, load and financial forecasts prepared within a more compact time frame.

Recommendation 10 (p. 5/13)

The Board recommends that Hydro file, for HR 18, up-dated information for 1989 on all aspects of the pricing and costing of secondary sales.

Recommendation 11 (p. 5/15)

The Board recommends that Hydro's management, and its Board of Directors, develop and implement an appropriate corporate strategy for export sales in relation to the FTA. This should also be examined by the Free Trade Task Force proposed by the Board in Recommendation 3. The Board will review progress towards developing such a strategy for Hydro during HR 18.

Recommendation 12 (p. 6/4)

The Board recommends that Hydro file, for HR 18, a more precise set of deadlines for the scheduling of its demand management initiatives. The exact targets which are to be met over the life of each program, and what action will be taken if they are not, should be included. Hydro should also demonstrate how the Energy Management Branch's impact estimates have been reconciled with the Economics and Load Forecasting Division's forecasts. End Use models will aid in this.

Recommendation 13 (p. 6/7)

The Board recommends that Hydro file, for HR 18, its conclusions regarding its evaluation techniques for energy management programs, accompanied by the analysis, and several examples of how the approach has been, or will be, applied to specific programs.

Recommendation 14 (p. 6/10)

The Board recommends that Hydro file, for HR 18, evidence which will permit the Board to examine Hydro's role as a regulator of the municipal utilities.

Recommendation 15 (p. 6/10)

The Board recommends that Hydro file, for HR 18, a report outlining the allocation of financial incentives to specific energy and load management programs, and the expected results.

Recommendation 18 (p. 7/6)

As one means of enforcing accountability, the Board recommends that Hydro consider disciplinary action, including dismissal, of personnel who are found directly responsible for budgetary overruns without strong reasons or direct authorization from a superior.

Recommendation 19 (p. 7/10)

Given the likelihood of staff levels being identified as excessive by Cresap, given the present economic health enjoyed in Ontario, and given the ability of outside firms to provide similar services to Hydro on a contract basis, the Board strongly recommends that the appropriateness of Hydro's continuity of employment program be re-examined. Vigorous early retirement and out-placement consulting programs are only two of the possibilities which may help alleviate the dislocation effects of trimming excess staff.

Recommendation 20 (p. 7/10)

The Board recommends that Hydro make continued efforts to reduce the salary gap which exists between Hydro employees and comparable groups of other employees.

Recommendation 21 (p. 7/12)

On the assumption that Hydro continues to believe that such a trade-off exists, the Board recommends that Hydro pursue its development of OM&A/Fuel and other "trade-off" models, and that it report on its progress in this respect during HR 18.

Recommendation 22 (p. 7/14)

Recognizing its value to management, the Board recommends that Hydro report, for HR 18, on the development and refinement of data bases, productivity models, as well as the use of all such information.

Recommendation 23 (p. 7/16)

The Board recommends that Hydro file, for HR 18, information on its standards for transmission and distribution preventative maintenance, in order that the appropriateness of expenditures allocated for these purposes may be reviewed.

Recommendation 25 (p. 7/24)

The Board recommends that Hydro carry out a Cresap-like review on all aspects of the operations of the Production Branch down to the level of the "work face".

Recommendation 28 (p. 8/8)

The Board recommends that Hydro file, for HR 18, a report describing in detail its plans for all plant which will be mothballed for all or part of the rate year, with sufficient documentation to support these decisions.

Recommendation 30 (p. 8/10)

The Board recommends that Hydro file, for HR 18, a report outlining its policies for purchasing electricity outside the Province of Ontario.

Recommendation 34 (p. 9/26)

Based on the Board's view expressed last year, and repeated this year, that greater disclosure of the various provisions for major future cost incurrence would be in the public interest, the Board recommends that Hydro disclose both the annual provisions, and the accumulated provisions, by major component, in its financial statements.

Recommendation 36 (p. 10/7)

The Board is encouraged that more communication is taking place both within Hydro, and between the Government of Ontario and Hydro, concerning the borrowing program. The Board recommends that the Government of Ontario continue to press for active input into the borrowing plans of Hydro.

Recommendation 37 (p. 10/14)

The Board recommends that Hydro file, for HR 18, a report clarifying, by the use of several specific examples over various maturities, exactly how it makes a cost minimizing decision about what it will hedge. Hydro should also provide the exact description of the conditions under which it would entertain another Special Hedging Program.

Recommendation 40 (p. 13/7)

The Board recommends that Hydro, for HR 18, reassess the appropriateness of its timetable for implementing changes to the capacity/energy split and address the feasibility of moving more quickly to the target levels, i.e. by 1990.

Recommendation 41 (p. 13/8)

The Board recommends that, for HR 18, Hydro reassess and report on the appropriateness of its time-of-use rating periods.

Recommendation 42 (p. 13/10)

The Board recommends that, for HR 18, Hydro reassess and report on the appropriateness of its timetable for implementing changes to the time-of-use costing differentials between seasonal and daily peak and off-peak usage, and address the feasibility of more quickly moving to the target levels, i.e. by 1990.

Recommendation 43 (p. 13/15)

The Board recommends that special condition rates be eliminated with due observance to existing contractual obligations.

Recommendation 44 (p. 13/17)

The Board repeats its recommendation of previous reports that Hydro, a supplier of bulk power and the regulator of municipal distribution rates, should prepare a report outlining its objectives, principles and practices with respect to end-use pricing of electricity in Ontario, together with any proposals for change; that the report should be filed with the Minister within six months from the date of this report, for public access and consideration.

2.2.3 Other Recommendations for the Minister's Consideration

Recommendation 16 (p. 6/12)

> The Board recommends to the Minister that a decision by Hydro to sell tritium be referred to the Board for review and recommendations concerning its economic aspects.

Recommendation 24 (p. 7/23)

> To the extent that the data used to support the nuclear hiring program initiative presented to the Board this year are essentially the same as those presented last year, the Board cannot recommend to the Minister that the nuclear hiring program recently instituted is either necessary, or economically viable.

Recommendation 29 (p. 8/9)

> The Board recommends that the Minister make the Select Committee aware of the Board's concerns relating to the way in which Hydro calculates reserve requirements, and hence the need for capacity more generally.

Recommendation 31 (p. 9/7)

The Board recommends that the Minister refer the issue of flue gas desulphurization options to this Board or another appropriate body for review and recommendations.

Recommendation 33 (p. 9/24)

In conjunction with Hydro's filing of updated irradiated fuel disposal cost information in 1989, the Board recommends that the Minister refer to this Board, for indepth review and recommendations, all provisions made by Hydro for major future cost incurrence, including decommissioning costs of generation facilities, fuel channel removal cost provisions, and provisions for irradiated fuel disposal.

Recommendation 39 (p. 12/6)

The Board recommends that the Minister call for a special hearing to examine the issues relating to parallel generation.

Recommendation 45 (p. 13/17)

The Board recommends that the Minister refer to this Board, for public review and recommendations, the full issue of cost allocation and rate design for retail electricity pricing in Ontario.

Recommendation 46 (p. 13/19)

The Board recommends to the Minister that the question of Hydro's class deficit recovery scheme be reviewed by the Minister when considering amendments to the Power Corporation Act, together with the broader question of the degree of flexibility and discretion the Government of Ontario wishes to grant Hydro in the use of such redistributive schemes.

Table 2.1

ONTARIO HYDRO

REVENUE REQUIREMENT

For the Year Ending December 31, 1989

($ millions)*

	Original Submission (1)	Hydro's Updates (2)	Updated Forecast (3)	Board Adjustments (4)	Board Recommendation (5)
Operation Maintenance and Administration					
OM&A Program costs	1.465	59	1.524	(30)	1.494
Other Costs and Adjustments	(48)		(48)	-	(48)
	1,417	58	1,475	(30)	1,445
Fuel and Fuel-Related					
Fuel used for electric generation					
Fossil	735	105	840	69	909
Nuclear	340	(8)	332	-	332
Internal Transfers	(11)	1	(10)	-	(10)
	1,064	98	1,162	69	1,231
Water Rentals	104	(1)	103	-	103
Power Purchases	86	(26)	60	-	60
Nuclear Payback Agreement	36	(6)	30	-	30
	1,290	66	1,356	69	1,425
Depreciation					
Generation	495	4	499	22	521
Other	344	1	345		345
	839	5	844	22	866
Interest and Foreign Exchange					
Interest	1,858	(8)	1.850	(1)	1,849
Foreign Exchange	49	(8)	41	-	41
	1,907	(16)	1,891	(1)	1,890
Guarantee Fee	-	-	-	25	25
Net Income	684	57	741	-	741
Gross Revenue Requirement	6,136	171	6,307	85	6,392
Secondary Sales	(194)	(10)	204	(16)	(220)
Net Revenue Requirement	5,942	160	6,102	69	6,171

*Figures may not add due to rounding.

Notes to Table 2.1
($ millions)

(1) Ontario Hydro's Submission dated April 1988.

(2) All Updates up to and including June 29, 1988.

(3) Exhibit 1.1.0, June 29, 1988 Update.

(4) OEB Adjustments to Hydro's Updated Forecast.

(a) OM&A		(30)
(b) Fossil-fuel increase		
due to reduced hydraulic generation	33	
due to load forecast increase	36	
		69
(c) Depreciation		
due to pressure tube depreciation expense	2	
due to fuel channel removal provision	20	
		22
(d) Interest		(1)
(e) Guarantee Fee		25
(f) Secondary Sales		16

(5) As per this report.

Table 2.2

ONTARIO HYDRO
DETERMINATION OF REVENUE DEFICIENCY AND AVERAGE ALL-CUSTOMER RATE INCREASE
For the Year Ending December 31, 1989
($ millions)

	Original Submission (1)	Hydro's Updates (2)	Updated Forecast (3)	Board Adjustments (4)	Board Recommendations (5)
Revenue at Existing Price Levels					
Primary Sales	5,632	147	5,779	56 (a)	5,835
Revenue Requirement	5,942	160	6,102	69 (b)	6,171
Revenue Deficiency	310	13	323	13	336
Average All-Customer Rate Increase	5.5%	-	5.6%	-	5.8%

Notes:

(1) Ontario Hydro's Submission dated April 19, 1988.

(2) All Updates up to and includino June 29, 1988.

(3) Source: Exhibit 1.1.0, June 29, 1988.

(4) OEB Adjustments to Hydro's Updated Forecast.

(a) Increased load forecast

(b) See Table 2.1

(5) As per this report.

3. HISTORICAL BACKGROUND

3.1 Introduction

This chapter provides a brief overview of the history of Hydro, describes the role of this Board in reviewing Hydro's rates, and reviews some of the findings of selected other inquiries into Hydro since the early 1970s. It is intended as an historical perspective to this report.

Electricity is vital to the Ontario economy. It is provided in large measure from resources indigenous to the Province. The widespread availability, and high reliability, of electricity supply at relatively low cost has been an important influence on the economic development of Ontario. Ontario's future welfare will be no less dependent on the continuing strength of the electricity supply system, and on the costs of electricity to consumers.

3.2 The Growth of Hydro

In the 1890s, technological advances permitted the transmission of electric power over great distances and it became possible to develop a large, interconnected network of generation facilities to supply widely-dispersed users. In 1906 the Hydro-Electric Power Commission of Ontario, today known as Ontario Hydro, was established by the Government of Ontario. Its primary role was to be a wholesaler of electric power to municipal utilities which would, in turn, retail that power to the consumers.

Several important issues were influential in the establishment of Hydro:

1. Citizens of many municipalities felt strongly that there should be local control over the retail service and pricing of electricity;
2. A strike in 1902 disrupted the supply of Pennsylvania coal to Ontario's industry and electric power generation, and the costs of coal rose rapidly;
3. An organization was needed to raise the large amounts of capital required to develop the abundant hydraulic resources such as Niagara Falls; and
4. There was a need to centralize control of transmission facilities so that electric power could be supplied widely across Ontario.

As a result, Hydro has been the centralized utility in Ontario since its inception, responsible for generating and transmitting electric power to municipalities which then distribute that power to consumers. Hydro also distributes electricity directly to over 800,000 rural retail customers in Ontario, as well as to more than 100 large industrial customers. In 1987, approximately 3,344,000 Ontario customers were served by Hydro and the 316 municipal utilities.

The traditional mandate of Hydro has been to supply essentially all the electric power that is potentially needed in Ontario. As a public corporation with a Board of Directors appointed by the Lieutenant Governor in Council (LGIC), Hydro reports annually to the LGIC, and the Legislative Assembly, through the Minister of Energy. Hydro must obtain approval from the LGIC to invest in new facilities, but it is for the most part the judge of its own costs.

Pursuant to Section 75 of the Power Corporation Act, Hydro must sell its power to the municipal utilities at cost. From the beginning, Hydro has sought to achieve maximum dispersion of electricity throughout Ontario. This policy resulted in steady system expansion in advance of demand, the doubling of sales every decade, and declining real unit costs of power through the late 1960s. Thus historically, an important objective in the pricing of electricity was to promote sales. As the sales of electricity increased, economies of scale could be achieved, especially with the construction of large hydro-electric and fossil-fuelled generation facilities.

The completion of the R.H. Saunders Generating Station on the St. Lawrence River in 1958, last of the most readily accessible sites for large-scale hydraulic generation, ended Hydro's construction of large hydraulic generation facilities. Large fossil-fuelled stations, mainly coal-based, were constructed in the 1960s so that by 1971, about 61% of Hydro's production was hydraulic generation; 38% was fossil-fuelled; and 1% was nuclear-powered.

Since 1971, Hydro's system expansion program has concentrated mainly on the construction of large-scale nuclear generating stations. Nuclear stations are capital-intensive and have a construction lead time presently estimated at about 15 years. Thus, by 1987, the generation mix was 47.5% nuclear, 23.8% hydraulic, and 23.9% fossil-fuelled. The balance was supplied by Manitoba Hydro and Hydro Québec.

Today, Hydro is one of the two largest electric utilities in North America, its assets exceeding $32 billion in 1987. It operates 80 generating stations with an installed capacity of more than 30,000 MW. A map showing the major generating facilities and transmission lines of Hydro is found in Appendix D of Volume 2 of this Report.

In 1987, Hydro supplied 126.5 billion kilowatt-hours of energy and received total revenues of about $5.3 billion. Hydro's outstanding long-term debt was approximately $24 billion at December 31, 1987.

3.3 Electricity Rates and the Role of the OEB

In the thirteen years from 1954 to 1967 there was no increase in the rates charged by Hydro to municipal utilities and to large industrial customers. However, these "wholesale rates", or "bulk power rates", began to rise sharply in 1969 with the annual increase reaching a peak of about 30% in 1977.

As a result of these rapid rate increases, and of Hydro's decision to construct 16 large nuclear generating units at Pickering and Bruce from 1971 to 1987, and later an additional four unit station at Darlington, there has been growing public concern about the control and management of Hydro and about how electric power policy should fit within Ontario energy policy more generally.

In response to this growing concern, Task Force Hydro was established by the Government in 1971 to consider ways to improve Hydro's operation. During the same period, the Advisory Committee on Energy (ACE) was established to review Ontario's energy supply and demand requirements, and to make recommendations on Ontario's future energy policies. In 1972, both Task Force Hydro and the ACE identified coordination of energy policy and improved means of public participation and review as important issues. The public review of Hydro's rates and the decision to expand the nuclear generation system received special attention.

In 1973, the Government tabled several major legislative proposals and supporting documents relating to energy policy, including Hydro's system expansion program for 1977 to 1982, a Task Force Hydro report on rates and financial policy, and a special report from Parliamentary Assistant, W. D. McKeough. The Ministry of Energy was established, and major revisions were made to the Ontario Energy Board Act and the Power Corporation Act. A key change to the legislation was to establish a process for the review of proposed electricity rate increases to allow public participation through OEB hearings.

Prior to 1973, the Ontario Energy Board's principal mandate had been limited to the regulation of natural gas utilities in Ontario. The regulatory process for natural gas, then as now, included public hearings, the approval of franchise agreements, the issuing of certificates of public convenience and necessity, the granting of leave to construct facilities, and the approval of user rates.

In June 1973, the Legislative Assembly amended the Ontario Energy Board Act, adding what is now Section 37. This section requires the Minister of Energy to refer to the Board, and the Board to review, the proposed changes to electricity rates to be charged by Hydro to municipal electric utilities and to large industrial customers, i.e. its bulk power or wholesale rates.

These wholesale rates are to be distinguished from the retail rates charged by the 316 municipal electric utilities, and by the private utilities that distribute electric power directly to end users. The retail rates of the municipalities, and those which Hydro charges to its rural customers, are regulated by Hydro without reference to the OEB or any other body.

3.4 The Board's Jurisdiction

As described in Chapter 1, subsection 37(2) of the Act requires that when Hydro proposes to change its rates to its wholesale customers, defined in subsection 37(1) as municipal utilities and large industrial users, Hydro must submit its proposal to the Minister who then must refer the proposal to the Board. The Board pointed out in HR 16, that it has continuing concerns about any attempt to restrict its inquiry into the rate proposal under subsection 37(2).

It is the proposed change in Hydro's bulk power rates which initiates the Minister's letter to the Board. The subject matter of the letter is the rate change proposal by Hydro. The Board believes the legislation requires it to consider more than just the narrow issue of the particular changes in the rates in the year in question. Rather the Board must also look beyond to the causes of the rate changes, and to the effect that current policy changes may have on future rate levels, in order to properly assess whether Hydro's proposal for the rate year is appropriate.

Pursuant to subsection 37(4), the Minister may, at any time, refer to the Board, any matter affecting, or relating to, rates (including principles and practices regarding power costing, ratemaking, financing, or service reliability) for investigation and examination by the Board at a public hearing. The Minister may, pursuant to subsection 37(6), specify criteria or factors to "guide" the Board in making the investigation, examination and report as provided in subsection 37(4).

Finally, it must be stressed that there is _no_ authority in the Act for the Board to approve, disapprove, or _fix_ the bulk power rates which Hydro charges. _The Board's role is solely one of review and recommendation_.

3.5 The Hearing Process

Since 1973, the Board has held fifteen annual rate hearings, and two special reference hearings (the first in 1974 on system expansion plans for 1977 to 1982, the second in 1977 on principles of electricity costing and pricing) in response to requests from the Minister, pursuant to Section 37 of the Act.

Hydro traditionally proposes that changes to its bulk power rates take effect on January 1 of the following year. Subsections 37(2) and 37(3) require Hydro to submit its rate change proposals to the Minister eight months before they are to take effect and require the

OEB to make at least an interim report to the Minister on or before August 31. Consequently, Hydro submits its proposals in April and the Board conducts its review between April and August.

It is important to note that the information this Board reviews may differ from that which the Hydro Board of Directors considers when it fixes final rates. Each April, the Hydro Board submits to the Minister a rate change proposal for the following year. Hydro subsequently supports this proposal by filing with the OEB, in April and May, thousands of pages of evidence and exhibits.

During the course of the hearing, the evidence supporting the proposal undergoes revision and updating by Hydro. Nonetheless, Hydro's final argument, submitted in July to the OEB, must address the original submission of April.

Because of the large volume of material filed originally, the subsequent revisions, the evidence presented, the interrogatories and responses supplied, the cross-examinations and queries raised, and the arguments submitted for the Board's consideration and recommendations, it is a race against time for the OEB to complete the hearing and submit a report to the Minister by August 31.

In September, the Hydro Board of Directors receives this report together with the recommendations of Hydro's senior corporate management, and in October, Hydro's Board sets the rates for the following year.

It is also important to note that after the OEB has concluded its hearing and review in June, Hydro staff undertakes an intensive review and revision of its own plans (i.e. between July and September). The OEB report, therefore, is not based on either the final rates chosen by Hydro's management or its final plans and budget which ultimately support this rate choice.

3.6 Selected Other Inquiries into Hydro's Activities

During the period from 1975 to 1981, there were two major public investigations into electric power issues apart from hearings conducted by this Board. A Select Committee of the Legislature conducted public hearings from 1975 to 1981 on a number of issues, including rate levels for 1976, nuclear generation expansion, nuclear safety, heavy water production, and uranium contracts.

The second public investigation from 1975 to 1980 was conducted by the Royal Commission on Electric Power Planning, also known as the Porter Commission. These hearings considered a wide range of planning topics. A major outcome was increased public understanding of the role and importance of load forecasts in determining Hydro's system expansion plans.

A third public investigation began on July 10, 1985. The Select Committee on Energy (the Committee), under the chairmanship of Philip W. Andrewes, MPP, Lincoln, a former Minister of Energy, was appointed by the Legislative Assembly of the Province of Ontario to "inquire into and report within ten months on Ontario Hydro Affairs".

In its first session the Committee reviewed the Darlington Nuclear Generating Station, a project then evaluated at $10.9 billion. The Committee found that with 65% of the project's costs irrevocably committed, completing Darlington had cost advantages over fossil-fuelled stations.

The Committee's review raised at least two key issues: first, the concern about Hydro's supply-side emphasis and the apparent lack of analysis of demand-side alternatives; and second, concerns about Hydro's planning process and about the delineation of operating and policy-making responsibilities between Hydro and the Government.

The second session of the Committee took place in April 1986. In its Report, issued in July 1986, the Committee expressed concern about the Hydro forecasting and planning process, how the report on Hydro's Demand Supply Options Study (DSOS) and future resource development plans which were in preparation would be reviewed, the role of the Government and the Ministry of Energy in Hydro affairs, the lack of public input into the Hydro decision-making process, the need for greater accountability of Hydro, and the need for the development of demand-side alternatives. The Committee made numerous recommendations to address these and other concerns of which the following six would directly affect the OEB if implemented:

13. The Minister of Energy should request the Ontario Energy Board to hold a public hearing to determine the price which best reflects the value of parallel generation to the system, and to determine the desirable amount of parallel generation that could be added to the system within the current planning horizon (p. 65).

16. The Ontario Energy Board should be empowered to hold bi-annual public reviews of Ontario Hydro's Resource Development Plan, and publish a public report with recommendations to Cabinet (p. 69).

17. The Ontario Energy Board should conduct a public review of the results of Ontario Hydro's demand and supply options study. This review should take place at least sixty days after a final report on the options and all supporting documents have been issued. Recommendations should be made to Cabinet in a public report (p. 69).

18. Ontario Hydro's draft resource development plan and supporting documents should be published sixty days in advance of the hearings in a form determined by the Ontario Energy Board (p. 70).

22. The Ontario Energy Board Act should be amended to give the Board the powers to regulate electricity rates (p. 75).

24. The Government should resolve the issue of intervenor funding (p. 80).

On February 11, 1988, another Select Committee on Energy (the Select Committee) was struck with a mandate to inquire into the affairs of Hydro. The chairman, Douglas A. Carrothers, MPP, Oakville South, was appointed by the Legislative Assembly to "report within one calendar year". The Select Committee is examining Hydro's Demand Supply Planning Strategy (DSPS) study made available in late 1987. Originally known as the Demand Supply Options Study (DSOS), this study, and the Select Committee's conclusions, will have serious implications for the province's approach to electrical energy over the next 25 years.

Two other committees were struck by the Minister at this time. The Electricity Planning Technical Advisory Panel was asked to provide opinions on whether the planning strategy associated with the DSPS contains an adequate technical basis for planning the future of the system. An inter-ministerial Review was initiated to ensure that the public's interest in electricity system planning (as reflected in the DSPS) was being considered and evaluated.

The report of the Electricity Planning Technical Advisory Panel was submitted to the Minister on July 15, 1988. The Report states:

> "... no simple answer could be given as to the appropriateness of the Hydro [DSPS] report"; and

> "The report does represent an important move by Hydro towards a better informed and involved public"; and
>
> "... there are a number of areas which require more attention and where improvements should be made."
>
> (Report of the Electricity Planning Technical Advisory Panel to the Minister of Energy, p. v)

The panel also commented on the appropriateness of Hydro's corporate goal; the need for improvements in Hydro's power system planning process; Hydro's need to enhance its forecasts; the need to formulate a consistent demand strategy with an emphasis on the role of rates; the need for an objective review of CANDU nuclear costs; the need to deal with the specifics of Hydro's independent generation policy; the need for Hydro to manage risk; and the need for an independent technical agency to conduct in-depth public reviews of Hydro's power system plans.

The inter-ministerial Report was delivered to the Minister on July 15, 1988. In all, the comments of ten Ministries were solicited. Many observed that Hydro should give more attention to demand management and the costing of Hydro programs to encourage demand management. Non-Hydro generation of electricity was considered a source of great benefit. Several observed that transmission requirements were not dealt with sufficiently in the DSPS. Other significant deficiencies of the DSPS cited were: the non-incorporation of free trade effects; the role of conservation; the need for environmental protection; the role and needs of rural customers; and electricity's role in economic development, particularly in Northern Ontario.

These studies are thus the latest in a long series of inquiries into aspects of Hydro's activities. More are planned (see, for example, the Minister of Energy's statements of August 1988 concerning his intention to appoint a committee to investigate the costing of CANDU nuclear reactors). Their influence, and that of the Board's own reports over the years, on Hydro's activities is, of course, open to debate as section 1.3 makes clear.

4. THE ECONOMIC ENVIRONMENT: 1989 AND BEYOND

4.1 Introduction

Hydro's activities and financial performance are affected by the economic environment in which it operates. The Board's review of Hydro's requested revenue requirement and rate increase for 1989 requires it to make an assessment of the economic environment in which Hydro is expected to operate next year. Naturally, there are many forecasts available, including Hydro's own. The Board selects from among these, that economic forecast which it feels is the most realistic one on which to base Hydro's estimates of costs and revenues for 1989.

Of particular interest to the Board this year was the impact which the proposed Free Trade Agreement (FTA or the Agreement) between the United States (US) and Canada may have on Hydro's operations. If ratified by both countries, the FTA is scheduled to come into effect on January 1, 1989, and thus is directly relevant to the rate year under consideration in this hearing.

4.2 The General Economic Outlook and Its Relation to Hydro's Proposed Revenue Requirement

Evidence on the current economic outlook was presented to the Board by Hydro and by Dr. de Bever who was called as an expert witness by Staff Counsel. Table 4.1 shows the Hydro February 1988 economic forecast (on which the rate proposal is based), the May 1988 economic forecast (on which Hydro's updates to the rate proposal are based), and the April 1988 forecast of Dr. de Bever.

The differences among the three forecasts were considered by most parties to the hearing to be insignificant, as indeed were Hydro's final revisions from the average of a collection of forecasters which it regularly samples. This does not, of course, guarantee eventual accuracy, but it does provide the Board with some assurances that the rate proposal for 1989 is not based on a particularly idiosyncratic view of the future.

Dr. de Bever and Mr. Rothman of Hydro both stressed that the three major question marks with respect to the future economic situation relate to the exchange rate (US$/C$), interest rates, and the likelihood of a recession in 1989. It was their view that the Canadian dollar was likely overvalued at its June 1988 value ($.82 US) and could be expected to decline over the rest of this year, and for 1989 on average. How quickly and to what average level was, of course, the question. Dr. de Bever was more concerned with the possibility of a recession late in 1989 but both witnesses stated that one was likely soon, given the extended duration of the

Table 4.1

COMPARISON OF KEY ECONOMIC VARIABLES

	Hydro's February Forecast		Hydro's May Forecast		de Bever's April Forecast	
	1988	1989	1988	1989	1988	1989
Real GDPP(1)						
- Ontario (% change)	2.2	3.5	3.5	2.7	3.0	2.0
Consumer Price Index						
- Toronto (% change)	5.0	5.2	4.9	5.0	5.6	5.8
Interest Rates (%)						
- Prime	9.6	10.3	10.0	10.4	9.7	9.2
- Long-term Can. Bonds	9.7	10.2	10.0	10.2	9.9	9.3
Exchange Rate						
- US$/C$	.775	.775	.796	.790	.795	.790
Energy Prices						
- Can. Crude C$	24.30	26.70	23.20	25.80	22.00	24.00
- International US$	17.50	19.50	16.80	18.50	16.00	18.00
Canadian Natural Gas						
- C$/mcf	3.60	3.80	3.50	3.75	3.10	3.25

Notes:

(1) GDPP = Gross Domestic Provincial Product

expansion phase of the present business cycle as compared to earlier post-war experience. In that event, Dr. de Bever noted, an increase in interest rates over the near-term could be expected until the recession arrived, at which time he felt they would likely fall.

While Staff Counsel had some reservations about the growth forecast, most parties were prepared to accept the bulk of the economic forecasts and analysis of events as presented by Hydro. The major exception was the exchange rate prediction which was to be adopted. The Municipal Electric Association (MEA), The Association of Major Power Consumers in Ontario (AMPCO), and the Consumers Association of Canada (CAC) all argued that it should be higher than the level of $.79 US being advanced by Hydro in its May forecast. Hydro itself, in reply argument, acknowledged that it considered "values in the range from 79 to 81 cents for 1989 as reasonable".

Changes in the key economic variables from those levels forecast can have a significant effect on the revenue requirement. The current year is a good example in that the average exchange and interest rates, and the continued healthy economic activity, are all better than anticipated last year at this time. As a result, Hydro's revenues for 1988 will in all likelihood be substantially higher than predicted.

Some evidence of the sensitivity of Hydro's revenue requirement to changes in these variables from forecast levels was presented (albeit in several places, and with some confusion and revision). For example, if the actual average exchange rate for the year changed by one cent (1¢) from the forecast figure, the revenue requirement could change by as much as $26 million, as updated; if the average interest rate changed by one percentage point, the revenue requirement could change by $23 million; if the average level of provincial economic activity changed by one percent, the average demand for electricity would change by about .44%.

As noted above, there was some disagreement as to the accuracy of these figures. The MEA in particular argued that "the sensitivities are used in an important way to arrive at revenue requirement; yet if the actual changes in Hydro's costs are not consistent with those predicted by using the sensitivities, then they are of limited value". A suggestion by the MEA for improving the quality of these estimates would, according to Hydro in reply argument, produce a less acceptable approximation than its own, be more time-consuming to calculate and, in any event, be unnecessary inasmuch as Hydro itself had taken great care with the estimates already in evidence.

Board Findings

The Board is of the opinion that a) the prospect of a recession in 1989 is not strongly enough reflected in Hydro's expectations of growth in provincial economic activity, and b) the forecast US$/C$ exchange rate may understate the eventual 1989 level. However, rather than reduce the revenue requirement accordingly, the Board believes that a conservative approach of potentially collecting more in rates ahead of a possible recession in order to provide funds for "rate smoothing", if required during the recession, is warranted. The Board is also interested in smoothing rate changes for reasons other than a possible upcoming recession. Collecting more now when times are good, and in advance of Darlington coming into service when, according to Hydro, rates will have to be increased to cover costs now being capitalized, will reduce the need for much larger increases over the next two or three years.

The Board finds that Hydro's May 1988 forecast for 1989 values of the relevant economic variables underlying its rate proposals are acceptable. However, the Board found Hydro's analysis of the likely impacts on revenue requirements of deviations from its economic forecasts somewhat simplistic and unsubstantiated. It was also presented in a confusing fashion.

Recommendation 1

> **The Board recommends that a) more explanation should be given when estimating the impacts on revenue requirements of deviations from Hydro's economic forecasts; and b) in future hearings**

such impacts should be presented at one place in the evidence, and be consistently referenced therein.

4.3 The Impact of the FTA on Hydro

In HR 16 the Board was "... of the opinion that Hydro is not giving the possibility of a free trade agreement and its potential impact on Hydro's operations sufficient attention" and recommended that a "... thorough study of [its] potential impact on Hydro ... be undertaken ... [and] reviewed in H.R. 17 if significant progress towards a free trade agreement has been made". Accordingly, evidence was presented this year to the Board by Hydro. Dr. de Bever was also asked to comment.

Both Dr. de Bever and Mr. Rothman of Hydro agreed that, while there is a collection of views on the subject, the likely overall effects on the Ontario economy would be in the order of one year's additional economic growth during the next decade over what it would have been without the FTA.

Because electricity demand is so directly tied to economic activity (and population changes), it could be expected to climb accordingly. Some sectoral shifts would certainly occur but these would have occurred in any event as a result of growing international trading pressures. Greater exports of electricity might well be possible, but neither Dr. de Bever nor Mr. Rothman saw this as a focus of Hydro's concerns at present, export sales being an incidental offshoot of Hydro's primary responsibility to supply electricity in Ontario.

Finally, it was simply impossible to know what the direct impact on the Canadian dollar, and hence on Hydro's borrowing costs, would be. As to the likelihood of Hydro being taken to the Disputes Resolution Tribunal envisaged under the FTA by US utilities on a charge of unfairly subsidizing electricity sales, Mr. Rothman and Dr. de Bever were both of the opinion that this was highly unlikely given the terms of the FTA.

Board Findings

The Board is pleased that Hydro has now addressed the FTA and its impact, at least in some overall sense. It notes that most of the parties took no issue with the bulk of the analysis as presented by Hydro and Dr. de Bever. The Board regrets, however, that the implications of the FTA Agreement have not been directly highlighted in the Load Forecast, or in the impacts which the FTA might be expected to have on costs (e.g. transmission) as the growth and sectoral shifts foreseen under the FTA Agreement come to take hold. Hydro intends to only revisit its study of the impacts of the FTA in the future if circumstances warrant. Annual reviews would seem called for. Finally, the Board feels the study is incomplete in certain important aspects (see section 5.3.3 on the FTA and Secondary Sales).

Recommendation 2

The Board recommends that Hydro be required to integrate explicitly the results of its FTA impact study with its load forecast, and its cost projections, and to present this information in next year's rate submission. The Board welcomes Hydro's offer to keep the Board apprised of developments in this area and would, therefore, expect to review the effect of any aspect of the Agreement at a future hearing.

Recommendation 3

The Board recommends that Hydro establish an internal Free Trade Task Force, made up of representatives from all branches, to monitor and manage the FTA impacts as they develop.

5. THE SALES FORECAST

5.1 Introduction

According to Hydro, its sales are made up of two components:

1. primary sales, which is electricity sold to Hydro's customers within the Province on both a firm and an interruptible basis; and
2. secondary sales, which result from the electricity sold at the convenience of Hydro to interconnected utilities located outside Ontario and to a small number of companies or utilities within Ontario which principally rely on their own generation resources.

These definitions of primary and secondary sales were the source of some confusion throughout the hearing.

For example, Hydro informed the Board that all secondary sales, even those termed "firm", are interruptible to meet commitments for primary sales. When the Board asked Hydro to address the usefulness of segregating sales into "primary" and "secondary" categories in the way it does, Hydro did not provide a satisfactory explanation as to the usefulness.

Board Findings

The Board is of the opinion that the simple classification of sales into "firm", "interruptible", "intra Ontario" and "export" would be more meaningful. The present distinction based on knowing whether or not Hydro's customers "principally rely on" other sources of electricity does not seem useful.

Recommendation 4

> **For this report, the Board accepts the traditional terminology of "primary" and "secondary" sales. For future hearings it recommends that more appropriate sales classifications be adopted.**

5.2 Primary Sales

The estimate of primary sales and, therefore, primary revenues, which is contained in Hydro's 1989 rate proposal, is based on Load Forecast 871214 (the Load Forecast) which was actually completed in August 1987. This Load Forecast contains a short-term forecast of the amount of electricity (in TWh) which will be generated by Hydro during 1989. It required several months to prepare. From this forecast of load, Hydro developed a forecast of primary sales in dollar terms. It is this forecast on which the rate proposal is based.

5.2.1 The Primary Load Forecast

Parties to these hearings over the years have agreed that the level of economic activity is the prime determinant of the level of electricity sales in Ontario, with population also being an important factor. Staff Counsel's witness, Dr. de Bever, again presented a model which explained changes in electricity sales from 1962 to 1987, this time modified to include the effect of population as well as economic activity. This permitted the Board to evaluate Hydro's primary sales forecast against someone else's approach.

Staff Counsel submitted that the Board should accept Dr. de Bever's load forecast which called for a somewhat lower forecast than Hydro's. Several of the other parties, however, recommended that Hydro's forecast of primary sales be adjusted upwards. They pointed out that the slowing of economic growth which Hydro had foreseen when developing load forecasts over the past few years has still not materialized. Instead, economic growth in Ontario to date has been much stronger than anticipated by Hydro. Thus Hydro significantly under-estimated 1986 and 1987 sales growth. And as Table 5.1 indicates, evidence from the first few months of 1988 indicates that this year's demand growth was also under-estimated, by approximately 3.9%. As a consequence, Hydro's forecast of 2.7% growth for 1989 would seem low.

Estimates provided by Hydro in recent years indicate that "... an increase in load of one percentage point over the forecast will reduce rate increase requirements by about 0.5 to 0.6 percent if the system load factor is maintained".

Board Findings

The Board is aware, and Hydro has argued, that a) the past is no guarantor for the future, and b) historical averaging may be a simplistic approach to forecasting (the Board would add "in certain circumstances"; in others averaging is actually quite a sophisticated approach).

The Board is also of the belief, as noted in Chapter 4: The Economic Environment: 1989 and Beyond, that economic events in the latter part of 1989 may not continue as advantageously as at present. Thus while there is a strong likelihood that the pattern of the recent past of under-estimating load growth will continue into the first part of 1989, it may well be that over-estimation could develop later next year.

Table 5.1

ACCURACY OF RECENT LOAD FORECASTS (1986-1988)

	Forecast of Growth in Energy	Actual Growth	Difference
Jan 1/86 - Dec 31/86	2.4%(1)	3.9%(2)	1.5%
Jan 1/87 - Dec 31/87	2.8%(3)	4.9%(2)	2.1%
Jan 1/88 - Apr 30/88	-	-	3.9%(4)

Notes:

(1) HR 14 Ex. 3.1.7 LF841210, p.1
(2) HR 17 Ex. 2.1.5 LF871214, Table C
(3) HR 15 Ex. 2.1.16 LF851209, p.1
(4) HR 17 Ex. 2.1.0, May 25 update, p. B-1

As a result, rather than adjusting the Load Forecast upwards by the full amount of the recent under-estimates, or to the average growth rate of 4.4% since the recession trough in 1982, the Board has chosen a more modest revision.

Recommendation 5

> **The Board recommends that the load growth forecast for 1989 be adjusted upwards by one percentage point to 3.7%.**

5.2.2 Hydro's Primary Load Forecast Methodology

In HR 16 (1987) the Board considered both the approach to load forecasting and Hydro's forecasting methodology more generally, and made several recommendations. At this year's hearing it was therefore interested to review what changes had been made.

Staff Counsel and several of the other parties to the hearing argued that there are still problems with the forecasting function, both technical and organizational. Regarding short-term forecasting, evidence at several points in the hearing indicated, for example, that the load forecast was either ignored or changed, and/or the Economics and Load Forecasting Division was not consulted where one might have expected it to be. The Association of Major Power Consumers in Ontario (AMPCO) pointed out that with more than fifty positions, Hydro's

Economics and Load Forecasting Division is "... one of the largest of such organizations in the country". Further, Staff Counsel argued that for the purposes of the hearing, more attention should be given to having a co-ordinated set of up-to-date forecasts made available.

In reply Hydro argued that many of the comments about its forecasting procedures were based on insufficient attention to evidence on the record, in particular AMPCO's observations about the size of the Division. It also indicated that the forecasts were prepared primarily to aid Hydro's Board of Directors and should, therefore, be timed according to that group's needs. Updates were provided to the OEB, and Hydro seemed to feel that these were adequate for hearing purposes.

Board Findings

On balance, the Board is satisfied with the improvements. More refined weather adjustments to models, the introduction of new families of models, and other changes indicate an increased professionalism. However, the Board believes that further advances need to be made because, in the 1990s, Hydro will no longer have the excess capacity to absorb any forecasting error as it has been able to do in the recent past. Hydro's move to "Energy Management", discussed in Chapter 6, and supported by this Board, as well as a free trade environment, will also require much more precise forecasting.

The Board finds it strange that almost no attention (in models, for reporting purposes, and so on) is given to the pricing of electricity when forecasting load. A more elaborate impact study of the proposed new rate structure on the load forecast would, for example, have been welcome.

The Board was interested to learn that End Use models appear to be nearing operational status after a long period of development.

Finally in this matter of forecasting methodology, it was of interest to the Board to learn that the forecasting function at Hydro came under scrutiny as part of the preliminary study of the management consultants from Cresap. The Board recommended such a review in HR 16. Messrs. Rothman and Franklin of Hydro took some satisfaction with Cresap's finding that the Economics and Load Forecasting Division was appropriately supported.

Cresap's view of the Economics and Load Forecasting Division is important, but it is only one of many. And while the Board's concerns are somewhat lessened in this regard, it nonetheless remains of the view that the Economics and Load Forecasting Division may well be overstaffed. The Board is as concerned with whether the Division's resources are being applied to unnecessary or redundant activities, as it is with whether these activities are properly staffed, (which is what Cresap asserts).

Recommendation 6

The Board recommends that the following technical changes be made to the load forecasting approach:

a) Hydro identify explicitly in its primary load forecast, by year, exactly what adjustments have been made for such major factors as non-utility generation, energy management programs, and the impact of free trade; and

b) Hydro expedite the process of introducing End Use models of electrical consumption so that they will be available to help evaluate the impact of the new energy management programs, among other things.

The Board also recommends that Hydro prepare a report for HR 18 which explains in detail what role the pricing of electricity plays in forecasting load using Hydro's forecast rate increases, together with an explanation of sensitivity analysis which Hydro has performed.

Recommendation 7

The Board recommends that Hydro instruct Cresap to examine the linkages of the Economics and Forecast Division with the rest of the Corporation.

Recommendation 8

> **The Board recommends that Hydro itself investigate whether more can be done to provide the Board with reasonably up-to-date and consistent economic, load and financial forecasts prepared within a more compact time frame.**

5.3 Secondary Sales

5.3.1 Level of Secondary Sales

For HR 16, at a time when oil prices were firming, Hydro had forecast secondary sales of 3.0 TWh for 1987, and 4.0 TWh for 1988 (updated later to 6.6 TWh and 5.9 TWh respectively). These can be compared to an historical average of about 10 TWh. This year, based in part on 1987 actual sales of 6.5 TWh, 1988 sales are forecast to decrease to 5.7 TWh, and 1989 sales are expected to be 6.3 TWh. These in turn result in a forecast of revenue for 1988 of $173 million, and for 1989 of $204 million.

At the hearing it was noted that net revenue from secondary sales in the first quarter of 1988 was almost 50% of what Hydro had originally forecast in HR 16 for all of 1988. On this basis, the Consumers Association of Canada (CAC) advocated increasing the forecast for 1989. The Municipal Electric Association (MEA), while arguing for higher prices for secondary sales, noted that Hydro had in fact increased its forecast of net revenue from secondary sales for 1989 by 50%. Hence, it felt no further change was necessary. Hydro, in reply, agreed, adding that the CAC was wrong to base 1989 annual forecasts on an abnormal first quarter of 1988.

Board Findings

The Board is required to assess whose perception of history is least jaundiced. It is pleased by recent evidence from the marketplace which indicates that higher prices for secondary sales do not discourage demand. And it encourages Hydro to seriously consider export as a possible strategic response to the FTA (see section 5.3.3).

Recommendation 9

> **The Board recommends that Hydro's revenue projections for secondary sales for 1989 be increased to $220 million from the updated level of $204 million.**

5.3.2 The Costing and Pricing of Secondary Sales

The Board in HR 16 indicated that it intended "... to concentrate in H.R. 17 on the pricing and costing of secondary sales". While it was somewhat overtaken by events such as the ending of the rate moratorium, the management review, free trade, and other issues involving corporate reorganization, the Board nevertheless made some attempt to clarify certain of the issues surrounding secondary sales.

As noted at the beginning of the Chapter, considerable confusion surrounds not only the very definition of such sales, but more importantly their importance to the Corporation and how they are actually priced.

To illustrate, Hydro has maintained for years that such sales are incidental to its corporate mission to supply electricity to the province of Ontario. In keeping with this strategy, Hydro characterizes such sales as a) all interruptible, and b) somewhat random occurrences. However, Hydro has contracts with Vermont for sales which have firm characteristics; it actually forecasts a certain level of secondary sales which it expects to make each year; and it justifies other corporate activities (e.g. the demothballing of Lennox) in part on the basis of such secondary sales.

Moreover, as noted in section 5.3.1, some parties to the hearing were concerned about the underpricing of such sales relative to market demand. Others argued that the appropriate unit costs were not used to price these secondary sales. And still others remarked that the margin added to the basic costs to cover increased social costs from these sales (the so-called "social adder") had not been visited for years, and should certainly be increased.

Board Findings

In the Board's view, social costs associated with secondary sales may be significant future costs which should be provided for in current rates. Hence, they are a significant and important consideration for the OEB in examining Hydro's rate proposal.

Because of the considerable confusion which exists with respect to secondary sales, and also owing to the importance which such sales may take on under the FTA, the Board reiterates its intention to examine the whole question of secondary sales, including the "social adder", in 1989.

Recommendation 10

> **The Board recommends that Hydro file, for HR 18, up-dated information for 1989 on all aspects of the pricing and costing of secondary sales.**

5.3.3 The FTA and Secondary Sales

The questions of the jurisdiction over the prices charged for the export component of secondary sales and how they should be calculated will become considerably more important if one moves into an FTA era beginning in 1989. The Board was thus interested to receive testimony on the impact of the FTA on export sales.

AMPCO stated that the potential revenues from the sale of tritium are greater than $25 million per year, and that the costs are minimal. It therefore argued that Hydro should begin immediately to obtain approval for the sale of tritium. Staff Counsel submitted that the Board should recommend that, if Hydro intends to sell tritium, it should first have a formal plan in place. He also recommended that such sales should be carried out by the New Business Ventures Division of the Energy Management Branch. Energy Probe has, of course, been extensively concerned for some time with the ethics and safety aspects of tritium removal, transport and sale.

Hydro stated that the views expressed in argument will be considered by its Board of Directors when it reviews tritium sales.

Board Findings

The Board is of the view that the economic aspects of the sale of tritium have not received the attention they deserve. The potential for rate reductions which may flow from such sales of tritium directly concern this Board. Hence, it expects to be given the opportunity to review any decision by Hydro to pursue such a sales program. This review would include an examination of all documentation regarding the economics of the sale, as well as a formal marketing plan.

All participants agreed that the FTA was unlikely to affect secondary sales in 1989, but there was some confusion about its eventual impact.

Such confusion is perhaps symptomatic of the absence, noted earlier, of a clear corporate strategy on the whole question of the FTA and the present role of Hydro as an exporter of an occasionally-available, but inconsequential, amount of electricity believed surplus to Ontario's needs.

The Board is of the opinion that international and interprovincial sales of electricity under the FTA will not take place for very long under the current practice. Careful scrutiny, and regulation, of the whole process will likely develop. And if, as well, the magnitude of US-Canadian electricity trade under the FTA should by chance be significantly under-estimated, then both the economic and air-quality aspects of the situation will make the establishment of an export/import strategy for Hydro even more essential.

In developing such a strategy, Hydro will no doubt also wish to consult with the Ministry of Energy and other interested Ministries and Agencies in the Government of Ontario. The Board would encourage these parties to canvass all possible strategies conscientiously including, for example, substantially increased sales (on the model of Hydro Québec); no sales at all; selected firm sales; and so on.

Recommendation 11

> The Board recommends that Hydro's management, and its Board of Directors, develop and implement an appropriate corporate strategy for export sales in relation to the FTA. This should also be examined by the Free Trade Task Force proposed by the Board in Recommendation 3. The Board will review progress towards developing such a strategy for Hydro during HR 18.

6. ENERGY MANAGEMENT

6.1 Introduction

Equally as important as the prediction of demand is its management, an activity classically described as "marketing". As part of the recent corporate reorganization at Hydro, the "Marketing Branch" was renamed the "Energy Management Branch". Hydro witnesses stated that the change better reflects its strategy of, and commitment to, energy efficiency and customer satisfaction. It hopes to encourage the efficient use of electricity where customers benefit through what it calls "demand management initiatives". Generally, the intent is to encourage people to use less electricity in total than they might otherwise have intended.

These initiatives include activities by Hydro which will increase consumers' efficient use of electricity, shift the load on the electrical system to different times of the day or year, and accelerate natural conservation.

Examples of such planned programs include more extensive industrial metering, the implementation of time-of-use rates, and approaches to space heating which will help conserve electricity. Hydro also announced more ambitious targets for these programs in terms of megawatts saved by the year 2000, and will make a greater financial investment to help achieve them. By the end of the hearing, the budget for the Branch for 1989 had been increased by $31 million (66%) over the 1988 budgeted amount of $47 million. Among other things, the Board was interested in examining exactly what impacts these programs are expected to have.

6.2 Impacts on Electricity Demand

As requested by the Board in HR 16, Hydro this year presented preliminary estimates of the total impact on the demand for electricity in 1988 and 1989 of each quantifiable energy management program. Hydro qualified these estimates by saying that the quantification is a complex and often imprecise exercise, but it also testified that it was among the leaders in North America in even attempting this.

Other parties to the hearing challenged the quality of the estimates of the benefits of the energy management programs. Staff Counsel, for example, argued that the estimates depended to an unknown degree on management judgement which thus detracted from their objectivity. The Consumers Association of Canada (CAC) likewise expressed concern that the estimates contain "a large element of speculation". The Association of Major Power Consumers in Ontario (AMPCO) argued that Hydro still could not measure the expected costs and benefits of these demand management programs. Finally, Energy Probe noted that the estimates differ as between Hydro's Energy Management Branch and its Economics and Load Forecasting Division. Because Hydro uses its official load forecast for production and planning decisions within the Corporation, Energy Probe was concerned that such decisions would not reflect the Energy Management forecast impacts, and thus would overstate the need for more load.

Remedies were accordingly sought. Staff Counsel urged the Board to recommend that at the next hearing Hydro file a document describing, with specific examples, how the estimates are derived, what inputs were used, and the role management judgement plays. The Municipal Electric Association (MEA) felt that while the impacts of the individual demand management initiatives were difficult to estimate, a more precise scheduling and planning exercise aided by an established tool, such as the "critical path" methodology used in construction planning, would help Hydro to assess and incorporate the impacts of these initiatives.

In reply to these concerns Hydro argued that the use of management judgement is unavoidable, and that it had provided the best possible estimates. It termed the difference, between Energy Management's estimated program impacts and those of the Load Forecasting Division, "negligible" and pointed out that the whole evaluation process was being further refined.

Board Findings

The Board is aware that Hydro faces many theoretical and practical difficulties in estimating the effectiveness of its energy management programs in terms of load reduction, and commends Hydro for its progress to date. However, the Board believes a more detailed analysis by Hydro of its estimates is possible, both as to scheduling and to exactly what Hydro expects to achieve with each program. Given that the budget devoted to these activities has increased significantly, this information is critically important to assessing the cost effectiveness of the programs.

Recommendation 12

> **The Board recommends that Hydro file, for HR 18, a more precise set of deadlines for the scheduling of its demand management initiatives. The exact targets which are to be met over the life of each program, and what action will be taken if they are not, should be included. Hydro should also demonstrate how the Energy Management Branch's impact estimates have been reconciled with the Economics and Load Forecasting Division's forecasts. End Use models will aid in this.**

6.3 Criteria for Energy Management Program Selection

In assessing the cost of the individual programs relative to the benefits, Hydro has developed three major tests which it referred to as the societal test, the three-year pay-back test, and the no-losers test. It is currently using the societal test; this test examines whether under the program, the total bill for all customers will be less, regardless of whether some individual bills increase. Hydro is also studying the use of all these tests in connection with the review of the Demand Supply Planning Strategy (DSPS) study. A final decision as to which to use will not be made until the completion of this review.

Opinions of the parties as to the appropriateness of the tests varied. Staff Counsel argued that these energy demand management programs are analogous to investments. Hydro should, therefore, evaluate its programs based on the total life-cycle costs and benefits so that it could compare these programs to supply-side alternatives on an equal basis. Energy Probe argued that Hydro really uses a form of the no-losers test rather than the societal test. This significantly reduces the attractiveness of demand management alternatives. The CAC was concerned that with the Energy Management Branch's budget increasing by 66% over 1988, the total price of electricity for Hydro's customers could well be increased by a greater amount than it could be reduced by the demand management initiatives. Therefore, the CAC recommended that Hydro take account of the full costs of its programs.

AMPCO similarly questioned whether Hydro was fulfilling its responsibility to its customers by funding demand management programs which result in increased overall system costs for which benefits are not known. It felt that the criteria for selecting energy management programs require more consideration than Hydro has devoted to them, especially given their importance to Ontario's electricity demand/supply balance.

The MEA recommended that the increase in the Energy Management Branch's 1989 budget be approved. It argued that the demand management initiatives could postpone the need for future facilities. Because the refinement of impact assessments and evaluation criteria takes time, and because time is of the essence, the MEA recommended approving the budget.

According to Hydro, the demand management evaluation techniques are not well-developed. Hydro stated that it is presently implementing demand management and refining its internal evaluation procedures. Hydro also pointed out that ultimately, of course, customer acceptance would be the final evaluator of whether a program was appropriate or not.

Board Findings

The Board notes that Hydro is refining its evaluation procedures for selecting demand management programs. The work should be completed by the end of 1988. This effort will help the Board assess the individual programs, as well as the total budget of the Energy Management Branch. In this latter respect, the Cresap review of the Branch will also be welcome, and scrutinized.

Recommendation 13

> The Board recommends that Hydro file, for HR 18, its conclusions regarding its evaluation techniques for energy management programs, accompanied by the analysis, and several examples of how the approach has been, or will be, applied to specific programs.

6.4 The Acceptance of Energy Management Programs

Various points relating to the acceptance of these energy management initiatives were raised by parties to the hearing. Staff Counsel noted that the energy management policies of both Hydro and the Ministry of Energy, such as time-of-use rates, have been frustrated by some municipal utilities which were expected to help implement the programs. Because Hydro regulates the municipal utilities, but was only planning to influence their activities by promotional means and not directly through the exercise of its regulatory authority, Staff

Counsel argued that the Board should investigate the relationship between Hydro and the individual municipal utilities in HR 18, with a view to encouraging the removal of obstacles to the implementation of energy management policies.

The MEA argued in response that Hydro's communication of its marketing policies to the municipal utilities had worked well and that any attempt by Hydro, or anyone else, to impose strategies would not be effective or well-viewed. It also stated that on only a very few occasions had local efforts differed from Hydro's and these might well have been justified by local conditions. Hydro concurred, arguing there was no evidence to support Staff Counsel's submission.

Energy Probe suggested that Hydro is still pursuing programs which build load, and that all such load-building programs and special rates should be cancelled in order that Hydro become as effective as possible in reducing load. AMPCO also argued that programs which build load and increase the market share of electricity are counter-productive to the objective of demand management. Such measures could accelerate, rather than retard, the need for additional capacity. And the MEA concurred suggesting that Hydro should only attach incentives to those programs which shift or reduce load.

Board Findings

The Board notes that the rate moratorium of the past few years is now over (see Chapter 13: Cost Allocation and Rate Design), and also that under the implementation phase of the new rate regime there is a certain flexibility available to the municipalities. The Board is, therefore, of the opinion that the position of Hydro as the regulator of the municipal utilities should be examined, both with respect to the eventual effectiveness of demand management initiatives and with regard to the introduction of the new rate structure. Thus as part of its general review of the appropriateness and effectiveness of Hydro's rates in HR 18, the Board plans to review the relationship of Hydro as a regulator of the municipal utilities.

The Board also notes that Hydro has provided only very preliminary details of the "new financial initiatives" aspects of certain of its energy management programs. In the absence of more detailed plans, the Board cannot determine to what extent load building rather than load shifting will take place. It is concerned that the funds may not be optimally allocated. Further, as suggested in Chapter 12: Non-Ontario Hydro Generation Sources, Hydro may wish to consider the allocation of incentives to large industrial/commercial customers who have the ability in place to generate their own electricity, but who use Hydro's instead, during peak periods. Economic alternatives using their own capacity at such times might be possible.

Recommendation 14

> The Board recommends that Hydro file, for HR 18, evidence which will permit the Board to examine Hydro's role as a regulator of the municipal utilities.

Recommendation 15

> The Board recommends that Hydro file, for HR 18, a report outlining the allocation of financial incentives to specific energy and load management programs, and the expected results.

6.5 Tritium

Tritium is a byproduct of the nuclear reaction. When the heavy water is irradiated, some of the deuterium contained in it is transformed into tritium. The tritium can be separated out, and the deuterium re-used. The tritium has low levels of radiation and is used in lighted signs, as runway markers, in medical applications, and also in the production of nuclear weapons. Hydro has a tritium removal facility at the Darlington site but has not yet decided whether to sell the tritium, the production and sale of which are regulated by the Atomic Energy Control Board and the Department of External Affairs of Canada. Should Hydro decide to do so, it is likely that such sales would be handled by the Energy Management Branch.

Recommendation 16

The Board recommends to the Minister that a decision by Hydro to sell tritium be referred to the Board for review and recommendations concerning its economic aspects.

7. OPERATION, MAINTENANCE AND ADMINISTRATION EXPENSES

7.1 Introduction

The Board continues to view Operation, Maintenance and Administration (OM&A) expenses in general, and efforts made to manage and control them, as a critical area for its attention. In 1989 these costs are forecast to increase over 1988 by 17% (i.e. $226 million) in nominal terms to $1.5 billion. In 1988 they increased by 20% in nominal terms over 1987; and in 1987 by 8% over 1986. Accepting Hydro's calculation of the general inflation rate over this period as the relevant OM&A inflation rate, this is an average real increase of over 9% for the three years.

The issues relating to OM&A costs, in general, reviewed by the Board this year included: what steps Hydro was taking to manage its costs; whether staff levels and salaries were reasonable; what trade-offs, if any, existed between OM&A expenses and those related to fuel; whether measures of productivity were effective management tools; and whether expenditures on transmission and distribution preventative maintenance were appropriate.

In addition, the Board also heard evidence on the Design and Construction Branch's Research and Development costs. Finally, as a response to certain hiring initiatives taken by the Production Branch, and as part of the Board's preliminary assessment of the Cresap consultants' reconnaissance review, the Board also examined certain activities in the Production Branch in further detail, albeit not to the same extent as it had during last year's hearing.

7.2 Cost Management and Control

Hydro's present business planning and budgeting process is now in its second year of use. It is a year-long exercise starting in January. Eight months are devoted to developing branch business plans and four to elaborating branch budgets. Once approved, budgets are monitored by the Comptroller's division using variance analysis.

In its preliminary report, the management consultants from Cresap characterized the business planning and budgeting approach of Hydro as among tne most conceptually sound that they had encountered. Nevertheless, they noted that the approach had been compromised by excessive detail which had reduced its usefulness and credibility.

Certain parties to the hearing also had strong opinions about the cost management and control process. Staff Counsel described it as one of incremental increases. He submitted that there was little focus on adjustments to programs throughout the budgeting stage and cited the example of the Corporate Relations Branch. He stated that reviewing changes during and after the budgeting process by senior management is a sound cost control methodology only if there is rigorous adherence to a policy of control. Because of the findings of Cresap, and specifically because the role of the comptroller as a "challenger" was considered not well-developed (Exhibit 1.1.18), he argued that one cannot have confidence that a sound cost control system exists at Hydro.

The Association of Major Power Consumers in Ontario (AMPCO) argued that the planning, budgeting and control process may be subject to the law of diminishing returns. AMPCO submitted that Cresap should be directed to report on the appropriate level of effort required by the branches to accomplish it. Energy Probe identified what it felt was a contradiction, in that the planning process was intended to track costs while rate increases, which should be driven by this cost record, have instead been guided by the policy of "no real rate increase".

The Municipal Electric Association (MEA) argued that the effect of the restraint programs previously growing out of the planning and control system had been to reduce or postpone central programs rather than eliminate nonessential ones. The MEA cited an increase in the Derating Adjusted Forced Outage Rate (DAFOR), adverse trends in nuclear programs, and a deterioration in transmission system and reliability as examples of the consequences which flowed from these restraints. The MEA argued that part of the problem of identifying savings was Hydro's "culture". Nevertheless, it recommended that Hydro continue its business planning process, that it propose specific targets and goals for further changes, and that it report on them for HR 18.

Board Findings

The Board appreciates that the 1989 rate year can, as Hydro has described it, be viewed as one of review and change. This does not, however, relieve Hydro of its obligation to plan its operations efficiently. The Board recognizes the difficulty that it, like Hydro's senior management, has in assessing the appropriateness of the OM&A budget, especially given its size and the amount of time available for the Board's examination. During this year's hearing, a scant three and one half days were devoted to this budget of $1.5 billion. As outlined in Chapter 1, the Board is actively considering means by which it can give itself more time to consider items such as the OM&A budget in greater detail.

At present, the Board concludes from the historical record, and from the evidence available at recent hearings, that there is no effective authority within Hydro to chasten or discipline for cost overruns. The Board notes, for example, that the OM&A budget in 1985 was $997 million. In 1989 Hydro expects it to be $1.5 billion, a 50% increase in five years during a period of relatively stable prices. It also notes, from Exhibit 4.2.1 in evidence, that at its inception in 1988 the business planning exercise led to a net decrease of $12 million in the OM&A budget. By the time the budgeting process had commenced, this reduction had been transformed into a net increase of $39 million. By the end of the budgeting process, a further $30 million had been added, and by the beginning of the hearing, another $6 million on top of that.

As an example of this lack of authority in Hydro regarding cost control, last year this Board was informed that some of the departments simply did not comply with a request from the Corporate Planning Division for a five percent variance analysis. This year, all departments complied, but some in a decidedly less meaningful fashion than others.

The Board continues to be concerned with the size and growth of the OM&A budget. It is aware that the management consultants from Cresap are now currently conducting in-depth studies of each individual branch, as well as studying the use made of management tools within Hydro. In any event this Board has a responsibility to recommend to the Minister whether the rates proposed by Hydro for 1989 are appropriate or not.

The Board also notes with great interest Cresap's belief that "in the order of ten percent of the Corporation's staff could be available for redeployment." (Exhibit

1.1.18, underlining provided), and is also aware that the President and Senior Management Committee identified a $10-$20 million target range for reductions associated with administrative effectiveness in the Hydro Senior Management Committee Workshop meetings held in July, 1987.

Recommendation 17

> Anticipating that the final report from the management consultants at Cresap will not differ materially from the preliminary findings, and believing that added challenge and discipline is required with respect to the OM&A budget, the Board recommends a $30 million overall decrease (i.e. 13%) in the proposed OM&A budget increase for 1989 of $226 million.

Recommendation 18

> As one means of enforcing accountability, the Board recommends that Hydro consider disciplinary action, including dismissal, of personnel who are found directly responsible for budgetary overruns without strong reasons or direct authorization from a superior.

7.3 Staffing and Wages

In 1989 Hydro expects that its total labour costs will be about $1.6 billion. This sum is, of course, allocated between OM&A and capital items but in total represents roughly 25% of the revenue requirement proposed for 1989.

Staff Counsel submitted that personnel levels remain too high. He also noted that the Cresap reconnaissance findings have resulted in a limited suspension of the external hiring program. With respect to wages and salaries, he was not satisfied that the 1988 negotiation exercise between The Society of Ontario Hydro Professional and Administrative Employees (the Society) and Hydro was conducted in the most effective manner, particularly with respect to Hydro's offer during the arbitration stage of the process. He raised the issue of the manner in which Executive Salary Role personnel salary increments are determined, arguing that if Hydro wishes to gain the true benefits of competition, it should allocate money on a merit basis only, not on some system of economic adjustment plus merit. Finally, he argued that Hydro should seek advice from the management consultants as to how to improve its use of performance contracts.

AMPCO indicated that it hoped that the Cresap studies will enable Hydro to answer the question of what its true regular staff requirement is. AMPCO was particularly concerned with the Design and Construction Branch staff levels, where it cited Hydro's observation that 100-150 key people would likely form the core of the CANDU capability. AMPCO submitted that as this was a small percentage of the total staff of the Branch, Hydro must immediately determine the future role of the Design and Construction Branch, and begin downsizing. It was also disappointed with the progress made in 1987 to narrow the wage gap between Hydro and the community.

The Consumers Association of Canada (CAC) also had concerns with respect to Hydro's staffing, salary and wage levels. It felt, for example, that ways and means existed to circumvent the hiring freeze the President had instituted on the receipt of Cresap's preliminary report. It also objected to Hydro's intention to continue its policy of guaranteed continuity of employment, arguing it ought to be reviewed or reconsidered in light of the existing favourable economic conditions. For several reasons it did not accept that the objective of attracting and retaining highly qualified staff in key positions justifies present wage differentials.

The MEA noted that staff levels have been a point of contention in past rate reviews but commented on the lack of a benchmark to assess whether future staff levels are appropriate or not. It recommended that such a benchmark, as well as a benchmark for OM&A costs in total, be developed by Hydro. The Society argued that if one wanted a true picture of Hydro's salaries and wages, they should be compared to those of other major Canadian utilities, and not just to large Ontario employers with similar labour force characteristics. It cited data from the Pay Research Bureau's Public Utility Survey which showed that on a weighted average basis, Hydro engineering salaries were only 5.9% above the Canadian utility average (Hydro excluded) in August 1987 as compared to a range of 9-17% above the Association of Professional Engineers of Ontario salaries.

In addressing these arguments, Hydro indicated that it is averse to adjusting its staff levels until the Cresap results are available. Hydro indicated that it is unlikely to cease its continuity of employment policy in any event. It considers its compensation policies and programs to be adequate and believes it is gradually achieving a narrowing of the gap between itself and the reference community.

Board Findings

In the past this Board has been of the view that Hydro's staff levels were excessive and the staff were paid in excess of reasonable standards. The Board notes with interest that the results of the management consultants' reconnaissance study confirm its view with respect to staff levels. It also finds Hydro's actions to date in response to the Cresap report, in particular the hiring freeze, satisfactory. As a consequence, and because the management consultants are pursuing more detailed studies of the rest of the Corporation which will be available for HR 18, the Board will defer from making any specific recommendation with respect to staffing levels at present. It would suggest that Hydro seriously consider and plan for the probability that Cresap will find more redundancies when it completes its work.

The Board has noted the argument of the Society that some gaps exist in comparable salary data. The Board nonetheless remains of the opinion that Hydro salaries are too high regardless of how, or to whom, one chooses to compare them.

Recommendation 19

> **Given the likelihood of staff levels being identified as excessive by Cresap, given the present economic health enjoyed in Ontario, and given the ability of outside firms to provide similar services to Hydro on a contract basis, the Board strongly recommends that the appropriateness of Hydro's continuity of employment program be re-examined. Vigorous early retirement and out-placement consulting programs are only two of the possibilities which may help alleviate the dislocation effects of trimming excess staff.**

Recommendation 20

> **The Board recommends that Hydro make continued efforts to reduce the salary gap which exists between Hydro employees and comparable groups of other employees.**

7.4 OM&A/Fuel Trade-Offs

Hydro has claimed for several years that there is a link between OM&A spending and reliability, and between OM&A spending and fuel savings. In its HR 16 report, the OEB requested a clear and concise presentation of Hydro's calculations of the trade-off between OM&A and fuel-related costs. For example, the Board wanted to know how much additional, higher-priced power Hydro believes would be required if reduced maintenance expenditures on power from lower-priced sources led to breakdowns.

Staff Counsel argued that these trade-off measures were generally difficult to estimate but necessary. He noted that the "nuclear cost versus performance" model was incomplete and he recommended that Hydro report during HR 18 on the progress with respect to this model, as well as on the thermal capacity energy model, the Lakeview TGS cost reliability model, and any other research relating to this issue. As well, he requested that the manner and extent to which they are integrated into Hydro's budgeting and planning should be presented.

The MEA noted that these trade-off models were intended to assist management in making cost trade-offs and were consistent with the Corporation's cost objective of minimizing long-term costs. However, in the view of the MEA, the evidence presented a) did not permit one to determine an accurate linkage between OM&A expenditures and fuel costs, and b) the models were certainly not sophisticated enough to establish accurately the appropriate levels of OM&A expenditures. Indeed, the MEA questioned whether they would ever be sufficiently sophisticated. As a result, it suggested that these models be used mainly as a cross-check to confirm the presence of certain trends. Accordingly, the MEA recommended that Hydro's evidence on the relationship between OM&A and fuel-related costs not be used for the purposes of setting OM&A budgets.

Board Findings

The Board recognizes that this is a complex trade-off to model and quantify, and may indeed be impossible to determine. However, it does believe that there is value in considering these problems if Hydro wishes to make use of such supposed trade-offs in justifying increased OM&A expenditures.

Recommendation 21

> **On the assumption that Hydro continues to believe that such a trade-off exists, the Board recommends that Hydro pursue its development of OM&A/Fuel and other "trade-off" models, and that it report on its progress in this respect during HR 18.**

7.5 Productivity

Productivity can be expressed as the amount of output an organization can realize from a unit of input. Typically, measures of productivity are based on accounting and budgeting information and are useful to management, as well as to anyone attempting to examine an organization's performance.

Staff Counsel argued that productivity and performance measures should be developed both for the branches and for managers in order to ensure that they are accountable for long-term performance.

AMPCO recommended that for next year's rate hearing, Hydro develop and file a corporate-wide labour productivity index based on "person hours worked per unit of primary energy sold" covering a long enough period of time to make an assessment of long-term trends possible.

The CAC stated that Hydro might be able to justify high compensation levels if it were able to achieve high productivity. However, Hydro's labour productivity is lower than the Canadian Electrical Association's composite index. Hydro was unable to explain why. Furthermore, the CAC was of the opinion that Hydro uses comparative measures of productivity when it suits its purposes, but is quick to reject their application when results are unfavourable.

The Independent Power Producers Society of Ontario (IPPSO) reminded the Board that the management consultants from Cresap had found that many of Hydro's performance measures were not effective management tools. Finally, several of the parties saw the continuing Cresap activities as directly relevant to improving productivity and awaited the results with interest.

Recommendation 22

> **Recognizing its value to management, the Board recommends that Hydro report, for HR 18, the development and refinement of data bases, productivity models, as well as the use of all such information.**

7.6 Transmission and Distribution Preventative Maintenance

As the two organizations representing the large majority of Hydro's direct customers, AMPCO and the MEA were particularly concerned with transmission and distribution preventative maintenance. AMPCO was of the opinion that Hydro has not demonstrated that transmission performance has fallen below desired levels and thus the need for corrective action was less compelling. It felt therefore, that it was not acceptable for Hydro to hire 172 staff to improve transmission and distribution reliability, when the only performance standard specified for transmission is more than met, and neither a standard, nor the performance data, for distribution was presented. A proposed expenditure of approximately $9 million over two years was, therefore, unjustified.

The MEA, on the other hand, claimed there was a decline in reliability which was directly due to the recent inattention to preventative maintenance. It acknowledged Hydro's present plan to halt further deterioration of the transmission system by 1988, and improve it to desired levels by 1991, but felt that actual recent business planning was inconsistent with this plan. It believed that Hydro should accelerate its preventative maintenance program by increasing the present budget by at least 25% ($15 million). It also recommended that Hydro report on the appropriateness of its maintenance standards during HR 18.

Board Findings

The Board believes that the question of appropriate levels for transmission and distribution preventative maintenance expenditures will become increasingly important for Hydro's system, which is relatively stable, aging and one in which non-utility generation sources may become more important. However, at present there are insufficient standards or benchmarks against which to judge the available data.

Recommendation 23

> **The Board recommends that Hydro file, for HR 18, information on its standards for transmission and distribution preventative maintenance, in order that the appropriateness of expenditures allocated for these purposes may be reviewed.**

7.7 Design and Construction Branch Research and Development Costs

Energy Probe submitted that there is insufficient evidence before the Board to determine where to draw the line between those resources needed by Hydro to maintain reactors that are now in operation, and those required to promote a future nuclear energy generation option. It stated that there was a greater chance of legitimizing the nuclear option without fully exploring other options, and that it would appear that Hydro had already assured there would be an extended nuclear program since a significant portion of the branch's R&D budget was devoted to nuclear research. Therefore, Energy Probe recommended that this budget item, and what it implied, should be examined in HR 18.

Board Findings

The Board is concerned with the increase in the branch's R&D costs, and with the fact that most of this increase is devoted to nuclear fusion (an alternative which is well off into the future) and relatively little to research into more conventional means of generation. The Board is also aware that R&D activities are carried out in other places at Hydro. In the Board's view consideration should be given to diversifying the Design and Construction branch's R&D budget.

7.8 The Production Branch Nuclear Hiring Program

The Board has, in the past, been sceptical of Hydro's claims that large budget increases for the Production Branch were necessary to maintain system reliability. As part of the HR 16 hearings, the Board conducted an OM&A specific investigation of the Branch. This investigation was prompted by the Board's awareness in HR 15 that the Production Branch's budget was growing significantly, and that Hydro insisted this was necessary to maintain system reliability.

The evidence submitted in HR 16 did not convince the Board that all of the Production Branch's cost increases were justified. The Board believed that there was room for improvement and tried to encourage an emphasis on productivity and long-run cost optimization. It considered that Hydro's arguments with respect to system reliability were unsubstantiated on the basis of the evidence presented, and thus was not persuaded that previous budget restraints had harmed Hydro's system reliability.

On May 16, 1988, on the basis of a special request made to Hydro's Board of Directors, outside the normal business planning and budgeting process, the Production Branch was granted permission to fill an additional 1,167 positions over the next two years as part of a nuclear maintenance program. This program will result in an increase in OM&A costs in 1988 of $10 million, and in 1989 of $44 million.

Six reasons were cited by the Production Branch for this request: the need to overcome an unacceptable and increasing backlog of work; the need to meet increasing regulatory demands; the need to meet more stringent industry requirements; the need to perform an increased level of inspection and maintenance activities; the need to retube Pickering units 3 and 4 on a tight schedule; and finally, the need to commission Darlington units 3 and 4 on the current schedule.

Staff Counsel found the evidence to support these six needs unconvincing and uncompelling. He argued that the evidence was misleading in that no trend can be discerned from the information. For example, the deficiency reports and number of "jumpers" (temporary repairs) which Hydro claims are increasing cannot be evaluated on the basis of the evidence. Hydro has a priority scheme for dealing with these reports, and some jumpers are more important to Hydro than others. He noted that Hydro indicated that the safety of the stations was never at issue.

He also questioned the timing of this submission to the Board of Directors. He asked whether a need for all these additional people could occur, and be identified, within the span of a few months. Moreover, he noted that the Production Branch had circumvented the Corporation's normal planning and budgeting process, and that the necessity for this circumvention had not been adequately justified to the OEB. He particularly questioned the coincidence of the proposal and approval of this program in a year of unexpected profitability and just three weeks before an across-the-company hiring freeze was implemented as a response to Cresap's preliminary results. These results were based on a detailed examination of the Production Branch which was known as the "Production Support Effectiveness Project" (PSEP), and which would show that up to 450 technical and support personnel in the Production Branch could be made available for redeployment.

Staff Counsel had further difficulties with respect to the nature of the information in the memo presented to the Board of Directors by management requesting permission for this program. He considered the memo to be one-sided and lacking in objectivity in that it did not disclose the full impact of the program. Nor did it reveal that the OEB had not been persuaded by essentially the same Production Branch evidence put forth in HR 16. The memo further made reference a) to inter-utility comparisons which Cresap considers inappropriate; and b) to statistical analysis using a regression model which was not complete.

AMPCO accepted that nuclear operations may require reinforcing but was unable to comment on the size of the necessary reinforcement. It was, however, "staggered" by the associated OM&A budget increase.

Energy Probe, while advocating that Hydro allocate and expend adequate human and financial resources to enhance the safety, reliability and environmental performance of its nuclear facilities, concluded there was virtually no evidence before the Board to justify the nuclear hiring program expenditures. No link could be made, for example, between the hiring program and safety concerns. In Energy Probe's opinion, there was simply insufficient information for the Board to fully determine adequate staffing and resources issues, and it suggested the Board so advise the Minister.

The MEA was of the opinion that inter-utility comparisons are not necessarily relevant to the justification of the nuclear hiring program. In its view, due to the highly technical nature of the findings and the safety considerations involved, neither the MEA, nor this Board, was in a position to contest the hirings in the Production Branch. Therefore, it recommended that Hydro pursue improvements in the nuclear area immediately. The MEA did, however, advocate redeploying some of the 2,000 excess staff identified by Cresap to fill all of these job requirements, rather than going outside for some of them as Hydro intends. By internally sourcing the additional hiring requirements, it felt that $25 million could be saved.

In reply, Hydro argued that Staff Counsel ignored external evidence that the absolute levels of some of the indicators of declining system reliability were too high and had to be reduced. Hydro also maintained that the Production Branch's proposal was needed and timely; that the special procedures adopted were necessary; and that the timing of the request was coincidental relative to the release of the Cresap findings.

Board Findings

Last year the Board spent considerable time reviewing the operations and programs of the Production Branch. The upshot of that examination was that the Board was not convinced that the Branch was operating effectively, efficiently and productively. Reliability, it appeared, could be used to sanction any amount of expense. Unfortunately, at least on the basis of the data presented to the Board last year (much of which was also used to convince Hydro's Board), and again this year in the hearing, the Board is of the opinion that reliability decline cannot be substantiated, or linked to the number of hirings needed in any important way. It troubles the OEB that Hydro's Board of Directors may perhaps not have understood this because of the nature of the presentation made.

This Board is concerned, as well, with the timing of this presentation. Firstly, it appears to have taken place outside the usual planning procedures. The Board realizes that it is reasonable for senior management to approach the Chief Executive Officer with unusual and imperative requests. This Board doubts, however, whether the nuclear hiring program can be qualified as such. This opinion is grounded in the observed magnitude of the program (eventually over $100 million for 1988, 1989 and 1990 inclusive) in a Branch whose budget presently stands at approximately $706 million. The suggestion that the need for such an increase occurred overnight is dubious.

Secondly, there is the matter of the timing of this request within the overall schedule of the Cresap work. The special in-depth study of the Production Branch by Cresap known as PSEP was jointly overseen by Cresap officials and senior management of the Branch, including Mr. Bartholomew and Mr. Ryder. Yet, it appears to have been these very same individuals from the Production Branch who formulated and presented the proposal for the nuclear hiring program to Hydro's Board of Directors. The coincidence of the approach to Hydro's Board for the nuclear hiring program preceding the PSEP results by a scant three weeks can hardly suggest anything other than a premeditated effort to increase resources prior to an expected reaction to findings of an excess.

The Board is, therefore, in the position of having to report on a "fait accompli". Its views on the Production Branch were made clear in HR 16. Senior executives, and Hydro's Board, chose to ignore those views.

The Board is pleased that Hydro conducted the PSEP study. Had the review included all employees in the Production Branch, and not just the support cadre, it might well have found even more personnel available for redeployment to nuclear maintenance.

In light of these findings, the Board reiterates its concern with Hydro's continued adherence to a policy of continuity of employment as stated in Recommendations 18 and 19. Given that a well-respected team of management consultants has identified considerable over-resourcing and redundancy of effort and function, the Board is concerned that Hydro's policy of continuity of employment may be inappropriate. Today, there are fewer instances where a continuity of employment policy is necessary on an ongoing basis, even advisable, or indeed carried out by many firms in this province. It is questionable, therefore, whether it is necessary or appropriate for Hydro.

Recommendation 24

> **To the extent that the data used to support the nuclear hiring program initiative presented to the Board this year are essentially the same as those presented last year, the Board cannot recommend to the Minister that the nuclear hiring program recently instituted is either necessary, or economically viable.**

Recommendation 25

The Board recommends that Hydro carry out a Cresap-like review on all aspects of the operations of the Production Branch down to the level of the "work face".

8. FUEL AND FUEL-RELATED EXPENSES

8.1 Introduction

Fuel and fuel-related expenses are the cost of fuel used for electricity generation, the cost of purchased electricity, costs such as water rental payments, and amounts associated with Hydro's own use of electricity and the Pickering pay-back agreement. Annual fuel and fuel-related expenses are based on a forecast of Hydro's production and purchases of electricity to meet primary and secondary sales known as the Consistent Energy Set (CES). During the proceedings, the CES was updated to reflect changed circumstances including the accelerated retubing of Pickering units 3 and 4.

Hydro has three basic categories of generation plant: nuclear, hydraulic and fossil. The amount of electricity supplied from each of the sources depends on: the total amount of electricity required; the performance of Hydro's generating units; the amount of water available for hydraulic generation; the availability of economically attractive electricity from external systems; and constraints on operations such as transmission limitations and environmental regulations.

The following tables set out Hydro forecasts of the production of electricity in 1989 and the associated net costs for ratemaking purposes:

Table 8.1

ELECTRICITY PRODUCTION *
(TWh)

	1989 Proposal	Hydro Update
Nuclear	70.5	68.8
Hydraulic	36.6	36.2
Fossil	26.5	33.7
Commissioning	1.5	1.5
External resources	4.0	2.7
Total resources	139.1	142.9

* Figures may not add due to rounding.

Table 8.2

FUEL AND FUEL-RELATED EXPENSE *
($ million)

	1989 Proposal	Hydro Update
Fuel used for electric generation		
Fossil	735	840
Nuclear	340	332
Internal transfers	(11)	(10)
	1,064	1,162
Water rentals	104	103
Power purchased	86	60
Payback Agreement	36	30
	1,290	1,356
Total Fuel and Fuel-Related	2,354	2,518

* Figures may not add due to rounding.

8.2 Nuclear Generation Costs

In HR 16, Hydro forecast nuclear generation to be 81.5 TWh for 1989. Hydro revised its forecast for 1989 nuclear generation levels to 70.5 TWh in its HR 17 proposal. This was later updated to 68.8 TWh. The alterations reflect delayed in-service dates of Darlington units 1 and 2; the acceleration of the retubing of Pickering units 3 and 4; and increased planned outages. Taken together, it caused Hydro to raise its forecast of the Derating Adjusted Forced Outage Rating (DAFOR) by about 1% on average, which reduced the output forecast.

The Association of Major Power Consumers in Ontario (AMPCO) stated that the increase in DAFORs is an overreaction to the increased scheduled maintenance outages. It argued that the DAFOR levels should be reduced to the levels predicted in HR 16.

Board Findings

The Board notes Hydro's submission that in recent experience, planned outages have forced extensions resulting in increased actual DAFORs. The Board considers nuclear reliability and the estimates of it for forecasting nuclear generation levels to be a matter of importance for continued annual review, and an area where conservatism in forecasting may be appropriate. However, the Board will accept Hydro's forecast of nuclear generated electricity of 68.8 TWh for 1989.

8.3 Hydraulic Generation Costs

Hydro operates twenty large hydraulic generating stations and numerous other smaller plants. The Province of Ontario is the title holder to the water resources used and charges Hydro a flat water rental fee which is not related to the quantity of water flowing through Hydro's hydraulic plants. Hence, this fee is more a tax on Hydro than a fuel charge.

The amount of hydraulic generation depends, among other things, directly on the quantity of water which flows through Hydro's plants. In any year, the quantity of water available is determined by the levels of the natural watersheds. This in turn depends on the extent to which the watersheds were drawn down in the previous year, and the spring run-off.

Board Findings

Hydro forecasts hydraulic generation of 36.2 TWh for 1989. However, because of the pronounced and lengthy drought during the first half of the summer, the watersheds will likely not recover to their equilibrium state. And they may be drawn down even further in 1989 from what they were during 1988. The Board is therefore of the opinion that Hydro's forecast is not achievable.

Recommendation 26

> **The Board recommends conservatism in forecasting hydraulic production for 1989. It suggests that Hydro adopt a forecast no higher than approximately that which it used for 1988, i.e. about 35 TWh.**

8.4 Fossil-Fuelled Generation Costs

Fossil-fuelled production of electricity is the most expensive source of generation, requiring coal or oil as fuel. It is used as the swing resource that balances system loads. In previous years, Hydro under-estimated the amount of fossil-fuelled generation required. For example, in both 1987 and 1988 Hydro forecast fossil-fuelled generation to be 19.2 TWh and 18.4 TWh, respectively. However, the 1987 actual was 31.7 TWh, and the 1988 updated estimate is 32.8 TWh. These under-estimates of fossil-fuelled production resulted in part from in-service dates of Darlington units 1 and 2 being delayed, the retubing of Pickering units 3 and 4 being accelerated, and planned outages having been increased.

For 1989, Hydro forecasts that fossil-fuelled production will be 33.7 TWh. All parties to the hearing accepted this forecast.

Board Findings

The Board accepts Hydro's 1989 fossil-fuelled production forecast of 33.7 TWh. However, for purposes of determining the impact on rates, and because the Board revised hydraulic generation down by 1.2 TWh, the fossil-fuelled generation level has been increased.

Recommendation 27

> **Because of the expected reduction in hydraulic production, the Board recommends that Hydro's production of fossil-fuelled generation for 1989 be increased to 34.9 TWh. This will add $32.6 million to the revenue requirement.**

8.5 Operation of the Lennox TGS

In response to an interrogatory, the Board and parties to the hearing learned that Hydro intended to return Lennox unit 4 to operation in time for the winter of 1988-89. Hydro based this decision on a need for an additional 1,400 MW of capacity for the upcoming winter, and estimates that 900 MW of that could be purchased from outside Ontario. Lennox unit 4 is a 550 MW unit and hence would be sufficient to make up the difference.

The Municipal Electrical Association (MEA) and Staff Counsel made submissions with respect to the additional capacity required. They pointed out that Hydro's load forecasters' opinion in this matter of load had been disregarded by the Power System Operations Division in that it had arbitrarily increased the Load Forecast on its own by 500 MW. Staff Counsel recommended that this be brought to the attention of the Minister, and the MEA recommended that the plant not be demothballed.

Board Findings

The Board is concerned over the decision-making process employed by Hydro when it considers whether to demothball a plant. It is particularly concerned because during the hearing, the question of Hydro's future plans for Lennox unit 3 was raised. Fuel panel witnesses testified that Lennox unit 3 was being physically examined to determine its condition while the Depreciation panel witnesses testified that they were assuming that Lennox unit 3 would be operating in 1989.

Recommendation 28

> **The Board recommends that Hydro file, for HR 18, a report describing in detail its plans for all plant which will be mothballed for all or part of the rate year, with sufficient documentation to support these decisions.**

Staff Counsel also suggested that Hydro's reserve requirement is more generous than is necessary because it incorporates some double counting. Hydro argued in reply that the reserve requirement is based on sound estimates of reliability of available capacity.

The Board is also concerned with how reserve requirements are calculated. As this is a long-term planning parameter associated with system expansion by the terms set out in the Minister's letter of reference it is to be excluded from the Board's review. However, others such as the Select Committee of the Legislature currently reviewing Hydro's plans might well consider it.

Recommendation 29

> **The Board recommends that the Minister make the Select Committee aware of the Board's concerns relating to the way in which Hydro calculates reserve requirements, and hence the need for capacity more generally.**

8.6 Purchased Power Costs

Hydro purchases power from non-Ontario Hydro generation sources (e.g. parallel generators) in Ontario and from utilities in neighbouring provinces and states. According to Hydro, purchased power costs of $60 million forecast for 1989, are unchanged from the 1988 outlook. The purchased energy forecast for 1989 (2.7 TWh) is unchanged from the 1988 outlook but down considerably from previous levels of 6.5 TWh and 7.3 TWh in 1986 and 1987, respectively.

This decrease over several years reflects the decreased availability of hydraulic energy from Hydro Québec due to strong demand growth for its load in Québec and allocation of some of that load to sales into more lucrative markets in the US. The MEA urged Hydro to continue efforts to achieve economically advantageous purchases from neighbouring provinces.

Board Findings

The Board is concerned that Hydro may not have fully accessed the domestic Canadian power markets. In light of the demand/supply studies presently under review, the Board would like to better understand Hydro's policies for purchasing electricity from outside the province.

Recommendation 30

> **The Board recommends that Hydro file, for HR 18, a report outlining its policies for purchasing electricity outside the Province of Ontario.**

8.7 Accounting for Fuel and Fuel-Related Matters

8.7.1 Introduction

Hydro must have secure and reliable supplies of fuel and related items. It has made several investments to satisfy this need including advances with respect to a coal mine and uranium mines, investments in heavy water production facilities, and a purchase agreement with Petrosar (a petrochemical manufacturer). The magnitude of these commitments and the substantial and long-lived impact on Hydro's revenue requirement, are of continued interest to the Board.

8.7.2 Cumberland Mine

The Cumberland Mine is owned and operated by the USX Corporation. In 1974, Hydro entered into a purchase agreement with USX for the development and operation of the mine. Hydro contributed to the costs of the mine's development, the leased equipment and ongoing capital requirements. In return, it was able to purchase the mine's output on a cost plus basis. The agreement was to expire in 2015 but allowed for cancellation on three years' notice if the contract was not economically feasible.

Hydro provided USX with such a notice of cancellation on November 17, 1987. As of that date, some $95 million of Hydro's contributed costs remained to be amortized. As Hydro will be receiving coal from the mine until November 1990, $10 million of this will be amortized against actual deliveries to that time. Hydro's Board of Directors has elected to defer the remaining $85 million and amortize it on a straight-line basis over 1989-93.

Some parties to the hearing noted that the five year amortization period was arbitrary. However, the Consumers Association of Canada (CAC) considered the period appropriate as cancellation benefits would thereby accrue to the customers who bore the cancellation costs.

Board Findings

The Board recognizes that because Hydro's Board of Directors is Hydro's regulator, it has the perogative to elect to expense, or, defer and amortize write-offs of this nature. Further, if it chooses to defer and amortize, the Board of Directors also has the freedom to set the amortization period, mindful of the need to recover this loss in an orderly fashion.

The Board does not accept the argument that the write-off should be accelerated. The proposed treatment is consistent with utility practices. The Board is not persuaded that Hydro's proposed net income is unacceptably high, or, if it were, that it would be appropriate to constrain net income to an acceptable level by accelerating this write-off. Hydro's approach is consistent with recovering the loss in an orderly fashion.

The Board also considers it appropriate to commence the write-off of this loss in 1989. If a commencement date of 1988 were chosen, it would be impossible to fully reflect the recovery of this cost. The proposed commencement date is acceptable to this Board.

8.7.3 The Petrosar Agreement

Hydro entered into a contract with Petrosar Limited to take quantities of residual fuel oil through to 1992. Petrosar took legal action against Hydro for failure to take contract quantities in 1981 and 1982. Hydro counter-claimed. After considerable litigation, Petrosar and Hydro negotiated an out-of-court settlement of the dispute, Hydro agreeing to pay $150 million. Hydro's Board of Directors decided that the appropriate accounting treatment of this cost was to defer and amortize it, on a straight line basis, over the five year period 1988-1992.

The MEA argued that Hydro should expense the Petrosar settlement amount entirely in 1988. It argued that the cost would not have an impact on the 1988 rates, which had already been set, but would reduce the 1988 net income. This would reduce the 1989 revenue requirement by $39 million, it argued, without compromising the applicable principles of rate smoothing or recovery.

Board Findings

The Board does not agree that the level of net income in 1988 is too high, or that it is appropriate to entertain accelerating the write-off of the Petrosar settlement. Again, the accounting treatment adopted by Hydro's Board of Directors is generally consistent with utility practice and acceptable to the Board.

8.7.4 Accounting for Uranium Advances

Hydro purchases uranium ore from mines owned and operated by Denison Mines and Rio Algom. These purchases are made under supply contracts which expire in 2012 and 2027 respectively. As it did in the case of the Cumberland mine, Hydro provided funds to these companies so that the mines could be developed. As of December 31, 1987, the unamortized portion of those advances amounted to $767 million.

As of January 1, 1987, Hydro decided to cease capitalizing post-production interest on the Denison Mines advance, as it has been doing with the post-production interest for Rio Algom. This expense will be charged to inventory costs and ultimately, to current operations as fuel expense. It will increase the 1989 revenue requirement by $11 million.

Most parties accepted the proposed accounting change. Several parties commented on the true worth of the advances. Many suggested that Hydro's accounting valuation of the advances was excessive.

Board Findings

The Board also questions the value of the advances Hydro is carrying as assets on its books. By all reasonable standards, it indeed appears that Hydro is in an oversupply situation with respect to its uranium needs. At the time the decision to fund these advances was made, the environment may well have suggested its necessity. However, Hydro's operating environment has changed, and Hydro has recently adopted a new corporate objective. While this does not detract from the accounting worth of the advances, it does push the expected benefits much further into the further. This increases the risk that Hydro may not recover the advances in an orderly fashion. This situation requires immediate attention. Hydro should consider applying a "lesser of cost and market" accounting principle to valuing these advances.

The Board accepts Hydro's accounting change made this year as progress in the right direction. The Board considers that the sooner a reduced and more appropriate level of value is carried on the balance sheet, the better. The Board is of the view that the value of advances should be monitored in subsequent proceedings. The examination should include a review of contract volumes and market prices.

9. CAPITAL PROGRAM COSTS, DEPRECIATION AND AMORTIZATION EXPENSES, AND RELATED PROVISIONS

9.1 Capital Program Costs: Introduction

Hydro's proposed Capital Program costs for 1989 are shown in Table 9.1.

Table 9.1

CAPITAL PROGRAM COSTS
($ million)

	1989 Proposal
Generation	
Nuclear	1,511
Fossil	99
Hydraulic	50
Heavy Water	258
Transmission/Distribution	768
Rural distribution	169
Administration/Service	49
Minor fixed assets	121
Demand management	30
Total capital program costs(1)	3,055

(1) Updated June 29, 1988, to $3,153 million.

As indicated in Table 9.1, Capital Program costs include the cost of: providing and modifying facilities for generation, transmission and distribution of electricity; providing facilities and equipment for service and administration; providing heavy water for nuclear units and financing heavy water inventory; and providing demand management incentives. These include appropriate amounts of capitalized interest.

Due to the large dollar amounts involved, interest capitalized prior to the in-service dates of these assets can have a considerable impact on annual revenue requirements. Substantial swings in the revenue requirement are likely to occur in the year in which an asset is brought into service, or in the case of a major rehabilitation, taken out of service. Other cost factors can also affect both the total investment in fixed assets and the on-going revenue requirement. For example, additional costs of materials would have an impact primarily on the eventual balance sheet cost of fixed assets, whereas increased utilization of regular company labour could both increase the fixed asset cost and reduce labour costs charged to current operations.

As noted, Hydro includes "financing heavy water inventory", a form of capitalized return, as part of its capital program. Like interest capitalized during construction, this is a proper allowance or return recorded on an asset during deferral of its use. Interest capitalized on advances to certain suppliers can also fit into the category of a proper allowance for funds which are tied up prior to use. Similarly, interest capitalized on the unamortized balances of deferred costs (a practice followed by many public utilities) can also be properly recognized as a capital program cost.

The concern in all cases of capitalizing interest should be whether doing so leads to an overstatement of the value of the asset. If it does, the proper course is to write-off some of the value in the current year; this is sometimes recognized simply by deciding not to capitalize the interest.

Although there are clearly considerations of rate stability and rate smoothing associated with the methods of accounting for capital program costs, a primary public interest consideration is whether these costs have been incurred prudently, e.g. whether the decision to build was made wisely and whether dollars were then spent with appropriate control and productivity.

Generally, the Minister of Energy in his reference letter to this Board has indicated his desire that the Board refrain from investigating system expansion and capital programs. The Board has accordingly limited itself to an examination of the revenue requirement impacts resulting from changes in capital programs which are currently underway.

If there is an observed increase in unit costs in the year of start-up of a major facility, which affects the revenue requirement, it could relate to various factors. For example, the increment in new capacity could be so great as to result in immediate under-utilization of a significant portion of the total capacity, notwithstanding the achievement of target in-service dates and the efficiency and productivity of the new plant.

Alternatively, the increase could also be due, in part, to the introduction of a significant level of new, deflated, dollars into a system characterized mainly by fewer, older, higher-valued dollars (a result of historic cost accounting used for ratemaking). Or, the increase could be due, in part, to a failure to achieve forecast cost savings from the operation of the new plant, such as occurs when higher-cost fossil-fuelled generation must continue to provide service when the in-service date of a nuclear reactor is delayed. Such a delay may be controllable, and has been of concern to the parties of this hearing and the Board.

These factors have been, to a greater or lesser extent, issues in this proceeding because in-service dates for Darlington units 1 and 2 have slipped since last reviewed in HR 16, as have the in-service dates for Pickering units 1 and 2. Also, the retubing of Pickering units 3 and 4 has been advanced from the late 1990s to 1988 and 1989.

According to Hydro, the increase in costs of $480 million for Darlington is primarily due to interest capitalization. This was caused by delays in the in-service dates, resulting from a limited number of trained staff being available for commissioning. The $16 million increase for retubing Pickering units 1 and 2 is also due to the limited availability of trained staff for commissioning. Retubing Pickering units 3 and 4 earlier than previously planned is estimated to cost $500 million net of a cost saving of $44 million due to the cancellation of the refabrication program for these units.

Two capital-related matters of particular interest this year were Hydro's plans for adding flue gas scrubbers to certain fossil-fuelled generation facilities and accounting for heavy water inventories.

9.2 Flue Gas Scrubbers

In 1989, Hydro proposes to spend $4.5 million in capital on scrubbers in order to: complete the environmental approval process to bring scrubbers to the same degree of availability or readiness as other options for controlling acid gas emissions, select processes and sites, commence preliminary design and prepare tenders.

Staff Counsel and other parties were concerned that Hydro had either made decisions, or would make decisions, prior to an appropriate public review of the economics of installing scrubbers. Moreover, in receiving approval under the Environmental Assessment Act, the economics of the option of scrubbers may not have received the same level of public scrutiny which would have been given to it by an economic regulatory tribunal like the OEB when reviewing a "leave to construct" application.

Under cross-examination, Mr. Franklin, the President and Chairman said that Hydro had not yet fixed on the scrubber solution:

> We haven't made that commitment. If something happens between now and 1990 which is a more efficient or more economic approach to it, then we are going to take the most efficient and economic approach.

__Board Findings__

For 1989, the Board accepts Hydro's estimates of its proposed expenditures to complete the environmental approval process for the Flue Gas Desulphurization Program. However, this Board's limitation with respect to reviewing capital project plans has been noted. Because of the expressed concern of all parties and the Board's concern that there may be other options to Hydro's Flue Gas Desulphurization Program (for example, clean coal technology, combined-cycle technologies, and natural gas), the Board makes the following recommendation.

Recommendation 31

> **The Board recommends that the Minister refer the issue of flue gas desulphurization options to this Board for review and recommendations.**

9.3 Accounting for Heavy Water Inventories

Heavy water production is a capital-intensive process. Accordingly, the bulk of the costs are of a fixed nature. Essentially, Hydro prices heavy water for a particular year simply by dividing the total costs to manufacture heavy water in that year by the units of production for that year. Obviously, the unit cost will then vary inversely with the production levels, and hence year-to-year unit cost changes will depend inversely on production volume variances. Several parties to the hearing were concerned that difficulties arise because heavy water inventory is valued using this cost methodology.

Board Findings

The Board shares this concern, in particular, with respect to the fact that heavy water inventories may be overvalued. The Board is of the opinion that the application of the "lesser of cost and market" valuation rule might also be applicable to valuing these inventories, just as it would be for uranium advances. At the very least, the Board wishes to consider the question of a maximum unit cost value that can be capitalized in inventory each year. The amounts in excess would then be charged to current operations. The Board did not examine this issue in depth in this proceeding. The Board intends to revisit this issue in detail in upcoming proceedings.

9.4 Depreciation, Amortization and Provisions for Major Future Costs: Introduction

Depreciation and amortization expenses, when incorporated in rates, are the accounting recovery of the cost of Hydro's assets. The issue is what the appropriate annual apportionment of these balance sheet costs should be for recovery in rates.

"Provisions for major future costs" include provisions for plant decommissioning costs, for fuel channel removal, and for irradiated fuel disposal, all of which are costs "booked" now in reasonable anticipation of their future incurrence. The principle of matching found in both ratemaking and financial reporting practice requires that such costs, which are reasonably certain to be incurred, should be estimated and appropriately allocated to the periods in which service is provided. For all such major future costs, there is both the question of the appropriate portion of such costs which should be allocated to each year, and the more fundamental question of estimating when and how large the future cost incurrence will be.

Table 9.2 sets out Hydro's estimates of expenses for the above categories as filed in its proposal and as presented in its final update, with the exception of the irradiated fuel disposal provision which is incorporated in the fuel expense for nuclear generation, and which is dealt with in a subsequent section of this chapter.

Table 9.2

DEPRECIATION AND AMORTIZATION EXPENSES AND PROVISIONS FOR FUTURE MAJOR COST INCURRENCES
($ million)

	Original Submission 1989	Hydro Update
Depreciation on fixed assets in service		
Generation		
Nuclear	373	377
Fossil	91	91
Hydraulic	31	31
Transmission/ Distribution	103	103
Rural Distribution	56	56
Administration/service/ minor fixed assets	52	52
	706	710
Fixed asset removal provisions		
Fuel channel removal	52	53
Decommissioning		
nuclear stations	31	31
fossil stations	3	3
Amortization of deferred costs	40	40
Other	7	7
TOTAL	839	844

The capital costs of fixed assets in service are depreciated on a straight-line basis. Depreciation rates for the various classes of assets are based on estimated asset service lives and the "remaining" average service lives of the asset groups (remaining from the date the depreciation rate change can be first reflected in electricity rates).

According to Hydro, major components of a generating station are depreciated over the lesser of the service life expectancy of the component and the remaining life of the associated generating station. Fixed assets removed from operation and mothballed for future use are amortized so that any estimated loss in value is charged to operations on a straight-line basis over their expected non-operating period.

The expected service lives of assets in the major asset classes revised for 1989 are as follows:

Generating Stations	
Nuclear	40 years
Fossil	40 years
Hydraulic	75-100 years
Heavy Water	Until the year 2040
Bruce Heavy Water Plant "B"	20 years
Transmission/Distribution/ Rural Distribution	10-60 years
Administration/Service Buildings	5-65 years

For 1989, the main changes affecting depreciation are: an increase in the average service lives of fossil generating stations to 40 years from the current 30-35 year range; a reduction in the average service lives of pressure tubes at Pickering units 3 and 4, and Bruce units 1 and 2, to 18 years and 21 years respectively from 25 years; a provision for the costs of fuel channel removal on a unit basis instead of on a fuel channel removal program basis; and a reduction in the annual amortization rate for Lennox units 3 and 4 to 2.5% from 5% of the capital costs of the units.

In a ratemaking sense, there are important inter-generational equity questions which arise with respect to the level of depreciation and amortization expense, and with respect to the level of provisions for future cost incurrence. Fortunately, since both of these relate to costs which will be collected over a long period of time, adjustments in the level of these expenses can usually be made gradually.

9.5 Service Lives

9.5.1 Fossil Stations

Hydro proposes to extend the depreciation life of fossil stations to a 40 year average life from the current mix of average lives of 30-35 years. Hydro is already using a 40 year life for system planning purposes. Staff Counsel and the Municipal Electrical Association (MEA) have argued that there should be no extension in fossil-fuelled station depreciation life until the Demand Supply Planning Strategy (DSPS) has been reviewed by the Select Committee and approved. Energy Probe opposed the extension of the depreciation life for fossil-fuelled plants observing that customers in later years of a fossil-fuelled plant's life will face both depreciation charges on the original components and on the replacement components.

Hydro's evidence was that new system resources are required by 1995, that rehabilitations of fossil-fuelled stations make economic sense, and that such plans are consistent with approaches to meeting generation needs accepted throughout the world. Hydro's assumption then is that existing fossil-fuelled plants will be rehabilitated and their service lives extended. Hence, Hydro argued that it is appropriate to extend depreciation life. It also took the position that "The DSPS cannot answer every question and everything cannot wait until the DSPS is approved".

Board Findings

The Board was somewhat concerned in this year's proceeding over the confusion of evidence surrounding depreciation. One Hydro witness testified that depreciation was taken against the net book value of the assets, implying a declining balance methodology of depreciation. Another Hydro witness clarified that this is indeed not the case, but rather that depreciation expense is mechanically calculated as a depreciation rate times the original cost of the asset, and is in fact a straight-line method of depreciation.

Hydro in argument quotes testimony that:

> There are likely to be assets within the same group that are fully depreciated prior to their average life and the customer is getting the benefit of those and paying no depreciation on those. That is a group concept.

In the Board's view, however, under the group concept there is no specific asset depreciation; it is the group which is depreciated. If one has agreed not to depreciate assets individually, it is meaningless to say that a specific asset is more or less depreciated. Each specific asset is part of the total original cost of the group of assets and, as such, arithmetically makes a contribution to the depreciation expense calculated each year. However, the depreciation expense is not then tracked to specific assets. Under a group concept one "pays" depreciation expense on all assets which have not yet been retired from the group, and stops "paying" depreciation on a specific asset only when it is retired from the group.

In the Board's view, Energy Probe's criticism is as much a comment on the straight-line depreciation method as it is a criticism of Hydro's use of straight-line depreciation. However, given even a moderate amount of inflation, Energy Probe's concern is mitigated by the fact that the original cost of the generation plant is in older, higher-valued dollars of which there are relatively few, and the replacement plant is in newer, lower-valued dollars of which there will be relatively more. That is, the depreciation charges on the original components have become relatively much smaller in real terms with the passage of time.

Notwithstanding the confusion on the record concerning depreciation methodologies, the Board accepts Hydro's evidence that, in all probability, fossil-fuelled plant lives will be extended by rehabilitation, and accepts that the depreciation lives should be adjusted to 40 years to reflect the lives currently used for system planning purposes.

9.5.2 Lennox Units 3 and 4: Depreciation/Amortization

Lennox units 3 and 4 are non-operating reserve facilities, mothballed for future use. As such, they are subject to amortization expense based on the forecast loss of value over the probable period of their being out of use. In practice the amortization expense, which is based on recommendations of Hydro's Depreciation Review Committee (DRC), would exceed the depreciation expense which would otherwise apply if the units were in service.

Based on the expected return to operation of Lennox units 3 and 4, and on this year's proposed extension of the average service life of fossil-fuelled stations, Hydro proposes to reduce the annual amortization rate of Lennox unit 3 from 5% to 2.5% for 1989. Lennox unit 4 is expected to return to service late in 1988, and depreciation of the unit at 5% will commence on the date the unit returns to operation.

In its argument, Hydro quite rightly found it necessary to address the confusion surrounding the testimony on depreciation and amortization of the Lennox units. The confusion surrounded the fact that the DRC had assumed Lennox 3 would return to service in 1989, whereas another Hydro witness testified that to his knowledge there was no planned return to service for Lennox unit 3 in 1989.

Board Findings

The Board accepts that in order to determine loss in value and appropriate amortization rates judgement must be used in arriving at the most probable return-to-service dates for mothballed facilities. However, and importantly in the Board's view, such probable return-to-service dates should be the same dates as are used by the Corporation for planning purposes, or by the Corporation in its underlying budget assumptions. Such budget or planning assumptions should be good enough for the DRC's purposes. The DRC should not act independently or inconsistently. In the Board's view, the absence of a budget or planning assumption to reopen a plant in the rate year is tantamount to an assumption that it will not open in the rate year, and that is the assumption the DRC should have used.

In light of Recommendation 28 which calls for a review of all plants mothballed during the rate year 1989, and given Hydro's current plans for Lennox units 3 and 4 as submitted in argument, the Board accepts Hydro's proposals for accounting for depreciation and amortization of Lennox units 3 and 4 in 1989.

9.5.3 Other Service Lives

Hydro proposed no changes to the service lives for hydraulic generation facilities, transmission and distribution, retail, communication and system control, and administrative and service facilities. Essentially no discussion of the appropriateness of these service life assumptions took place.

However, service lives of nuclear generating facilities and heavy water received some discussion during the proceedings, as did the service lives of reactor pressure tubes (which are dealt with separately in section 9.6). Although Hydro proposed no change to the 40 year average life assumption for determining remaining lives of nuclear facilities, Energy Probe proposed reducing the average service life to 30 years on the basis of US experience related by the Consumers Association of Canada (CAC) witness, Dr. Wilson, and on an expressed concern that "no one has a good handle on what happens to nuclear facilities as they age".

Heavy water is considered a depreciable asset and, due to its portability and homogeneous nature, is treated on a company-wide basis, instead of in separate asset pools by generating station. Its depreciable life is determined on the basis of its expected utility under the CANDU design concept, a concept expected to remain viable until 2040. Energy Probe expressed concern over the arbitrariness of this date and noted that, based on a forty year life, Hydro's last nuclear facility currently planned for and under construction would be out of service by 2032.

Board Findings

The Board notes that currently the shortest remaining service life for a nuclear plant is 24 years, and expects to be updated on the expectations of nuclear plant service life in future rate review proceedings. In the Board's view, there is insufficient evidence to recommend any changes to these depreciation rates at this time. However, technological and safety considerations suggest that nuclear facility lives and service conditions should continue to be monitored and actively assessed.

The Board is aware of discussions in other forums with respect to the possible need for further nuclear generation facilities, and is also aware that service life estimates could be extended. As a result, and because in its view, there is insufficient evidence to recommend a revision, the Board accepts Hydro's estimate of the remaining depreciable life of nuclear facilities and heavy water for 1989.

9.6 Pressure Tube Service Lives and Provision for Fuel Channel Removal Costs

Hydro has also proposed to reduce the average service lives of pressure tubes at Pickering units 3 and 4, and Bruce units 1 and 2, to 18 years and 21 years respectively (from 25 years).

Hydro has reported at length on the question of determining average and remaining lives for fuel channels at its various nuclear reactors in its Depreciation Review Committee recommendations (Exhibit 6.1.3). Hydro estimates the service life of a pressure tube based on its unique characteristics. The tubes are grouped on the basis of their common characteristics for purposes of determining average service lives. Once the service lives of the tubes for a particular nuclear unit are determined, the tubes are grouped by nuclear unit for purposes of depreciation.

The Board understands that the tubes would then be treated as "major components of generating stations" and, hence should be, "depreciated over the lesser of the service life expectancy of the component or the remaining service life of the associated generating station".

On the face of it, this policy for depreciation of major station components would seem clear: at the end of its service life a pressure tube would be subjected to what is known in group depreciation language as a "normal retirement". Straight line depreciation would continue at the prescribed rate, but would be applied against a reduced total original cost; and, when new pressure tubes were put in place, their original cost would be added to the original cost of the group.

Hydro's variation on this, however, is to perform the normal retirement of a tube which has been taken out of service only when a new pressure tube has been installed. In other words, Hydro continues to calculate depreciation expense with respect to the pressure tubes for one and one half to two years after they have been taken out of service. A Hydro witness observed, "We have a policy whereby we consider an old asset out of service when the replacement asset comes into service".

Staff Counsel, the MEA, and Energy Probe all submitted that the pressure tubes should be retired when they are removed from service and not when the replacement pressure tubes are installed. The effect of such a change in approach would be to forecast shorter average service lives for pressure tubes and therefore determine higher depreciation rates for the pressure tubes while in service. The shorter average service life would also lead to an increase in the provision for fuel channel removal costs.

Parties argued that appropriate levels of depreciation expense with respect to the tubes should be charged while the tubes are in service; the tubes should then be retired leading to a slightly lower calculated depreciation expense during the removal and replacement period when customers bear the higher costs of alternative generation; and then, when the new tubes are put in service, depreciation expense should be calculated against those asset costs.

Board Findings

The Board has not investigated whether the policy of considering an old asset out of service only when the replacement one comes into service is broadly applied by Hydro, but doubts that it is. The Board would certainly be concerned if assets such as, for example, trucks and heavy machinery, were kept on the books and depreciated until replacement assets were acquired. If the decision was taken not to replace an asset, one would simply never retire an old asset even though it might no longer be in service.

The Board would also expect that the changes in policy with respect to the service lives of pressure tubes recommended by the parties to the hearing could be implemented for 1989 (Exhibit 6.3.2). Based on a Hydro undertaking the appropriate adjustment to depreciation expense for 1989 should be an upward adjustment of approximately $2 million, and that the adjustment to the provision for fuel channel removal would be an upward adjustment of $20 million. In the Board's view, these adjustments would reflect upward revisions in the depreciation rate and a requirement to fund fuel channel removal more quickly (in fact to "catch up" for the implied, significant under-provision for fuel channel removal with respect to Pickering units 3 and 4).

Recommendation 32

> **Consistent with its stated policy for major components of generating stations, the Board recommends that Hydro revise its depreciation policy to require that pressure tubes be retired at the end of their useful service lives. The impact of this revision for 1989 is to increase the pressure tube depreciation expense by $2 million and the provision for fuel channel removal expense by $20 million.**

9.7 Irradiated Fuel Disposal Costs

Hydro's proposal for irradiated fuel disposal costs for 1989 was described previously in section 9.1 of this chapter. According to Hydro, the irradiated fuel disposal concept is still undergoing refinement, and new data will not be provided until the hearing on 1990 rates. For 1989 rates, the major assumptions, which continue, are that: the estimated in-service date for disposal facilities is the year 2010; the estimated distance from generating stations to the disposal facilities is 1,600 kilometers; and the expected irradiated fuel transportation disposal costs will be as presented in the 1991 irradiated fuel accounting study.

The forecast net provision for 1989 is to be accumulated during the year as a charge against fuel expense of .48 mills per KWh of net energy produced by nuclear generating stations in 1989.

According to Hydro, the disposal date may be delayed beyond 2010, thereby tending to reduce the required annual provision. Unfortunately, this may, in part, result from the additional time required to find a satisfactory method of disposal of the irradiated fuel.

Board Findings

The Board notes Hydro's intention to update the cost estimate for the disposal of irradiated fuel in its next rate review proceedings. The Board shares the concern of Energy Probe and others that the costs of irradiated fuel disposal and the corresponding annual provisions may be understated.

Hydro's Exhibit 6.1,4, entitled "Interim Report: The Nuclear Fuel Waste Management Program (NFWMP) and Its Impact on Irradiated Fuel Disposal Costs", points out that irradiated fuel is presently stored in water-filled bays at the reactor stations. Hydro asserts that this approach is "safe, economical and reliable", but is "only an interim solution". Four irradiated fuel management scenarios have been studied and the current interim storage, followed by shipment to an immobilization facility and adjacent repository, is the most desired option. The reference disposal concept for the research program is "underground burial of the immobilized fuel and/or wastes at depths up to 1,000 meters in a plutonic rock". The program is oriented to the assessment of the viability and safety of this disposal concept.

The assessment will be completed by 1991 and submitted for public review. According to Hydro's Exhibit 6.1.4, there is no assurance that the concept will be acceptable to governments. There appear to have been considerable research efforts but, for many, the existence of a safe permanent storage solution for irradiated fuel must be taken on faith. It is very difficult to say definitively what provision should be set aside in order to meet the very uncertain costs of what is not yet a proven satisfactory method of disposal.

Since the inception of this provision in the early 1980's the Board has supported its inclusion in rates, recognizing the importance of putting "something" aside. The Board considers this an important matter of public interest for the citizens of Ontario and awaits Hydro's submissions in HR 18.

9.8 Nuclear Decommissioning Cost (NDC) Provisions

In HR 16 Hydro submitted revised nuclear decommissioning cost estimates and proposed upward revisions in its NDC provisions for 1989. For determining 1989 provisions, Hydro proposes to continue the costing assumptions and methods used in 1988.

In HR 16, the concern of parties and the Board resulted in a Board recommendation calling for a special independent public hearing to review Hydro's decommissioning policies and costs. Given the importance of occasional indepth reviews of all provisions for future major cost incurrences (decommissioning costs, irradiated fuel disposal costs, and fuel channel removal costs), the Board this year makes the following, somewhat broader, recommendation to the Minister.

Recommendation 33

> **In conjunction with Hydro's filing of updated irradiated fuel disposal cost information in 1989, the Board recommends that the Minister refer to this Board, for indepth review and recommendations, all provisions made by Hydro for major future cost incurrence, including decommissioning costs of generation facilities, fuel channel removal cost provisions, and provisions for irradiated fuel disposal.**

9.9 Other Matters

There are two further issues with respect to the provisions for major future cost incurrence: a) whether some or all of such provisions should be separately reported in Hydro's financial statements, and b) whether some or all of such provisions should be separately funded.

Decisions giving rise to these major incurrences of costs in the future commit future generations to finding the necessary monies to pay the costs for which the present generation is responsible. This is true even if appropriate amounts have been provided for in today's rates. In the Board's view, a significant public interest attaches to such a commitment and responsibility. This is especially so when even though the costs may now be small, there is no turning back from their future incurrence and significant magnitude.

In order to reject recommendations for more disclosure of information relating to these provisions for future costs, Hydro relies on what the accounting profession refers to as "materiality" for purposes of financial reporting. If a cost is not "material", it need not be reported separately. Yet the same accounting profession holds the view that, on some matters, a company which is regulated as to its reporting and/or pricing may report, for financial purposes, in the manner required by the regulator and still be considered to be within generally accepted accounting principles. The latter is true in spite of the fact that generally accepted accounting principles, as applied to a company which is not regulated, would require the company to report differently.

Hydro is its own regulator. If it believes that the public interest would be served by a greater disclosure of the details of the provisions for major future costs, it can do so without violating or unduly relying on generally accepted accounting principles. For example, it does not unduly rely on such principles when it decides, quite rightly, given its cost-based approach to ratemaking, to defer and amortize certain costs which would, in all unregulated companies, be expensed in the year that the loss was recognized.

In HR 16, the Board recommended that more information be reported. To the extent that Hydro has added some information on these provisions to the notes to its financial statements for 1987, it should be commended. However, this only goes part way to meeting the Board's concerns.

Recommendation 34

> **Based on the Board's view expressed last year, and repeated this year, that greater disclosure of the various provisions for major future cost incurrence would be in the public interest, the Board recommends that Hydro disclose both**

> the annual provisions, and the accumulated provisions, by major component, in its financial statements.

On the question of establishing separate funds for the provisions for major future costs, it has been argued in other jurisdictions that there would be greater assurance that funds would be available when required if they were established, for example, with a trustee external to Hydro. This is, of course, debatable. In utilities which are subject to income tax, something which Hydro is not, there may also be tax complications which lead to favouring one approach over another.

Held within Hydro, the accumulated provisions constitute a low cost form of capital which is deemed to support utility assets. If they were held, for example, by a trustee external to Hydro, the provisions, if sufficiently and securely funded, might be a source of some comfort to citizens, ratepayers and management.

Fortunately, in the Board's view, the provisions are currently sufficiently small to permit ample time for further consideration before choosing whether or not to fund these provisions externally. In any event, the Board would expect this issue to be considered in any independent proceeding to review provisions for the incurrence of major future costs. Until such time a more full disclosure of the information on the provisions on Hydro's financial statements will permit interested parties to be alerted in a timely manner to this issue of "separate funding".

9.10 Depreciation Review Committee (DRC)

The Board, noting the confusion caused by some of the evidence given on depreciation matters in this year's proceeding, also considered the recommendation of the MEA that the DRC should include in its membership an individual with a qualified accounting designation.

According to Hydro:

> The DRC is responsible for providing formal engineering and financial review of service lives and removal costs for fixed assets, amortization rates for non-operating reserve facilities, and the estimated costs for the transportation and disposal of irradiated nuclear fuel. The Committee is not responsible for accounting policy, nor for determining the status of facilities as being operational, non-operational or surplus. ... The Committee has recommendatory authority only, and its recommendations are widely reviewed in the Corporation prior to receiving Executive Approval. ... The Finance Branch representative brings to the Committee a broad understanding of financial matters. It is not required that any member of the Committee have a recognized accounting designation.

Board Findings

In the Board's view, provided "the Finance Branch representative brings to the Committee a broad understanding of financial matters", there need not be the requirement that any member of the Committee have a recognized accounting designation.

10. THE BORROWING PROGRAM, INTEREST EXPENSE, AND FOREIGN EXCHANGE CONSIDERATIONS

10.1 Introduction

The Board in its HR 16 Report made numerous recommendations with respect to Hydro's Borrowing Program. The Board commends Hydro for taking action on many of them.

This year Hydro's Borrowing Program was of concern to the Board not only in its own regard, but also because the interest and foreign exchange expenses associated with it represent over 30% of Hydro's 1989 revenue requirement. The appropriateness of the proposed borrowing program for 1989, how it is managed, the role of the Ministry of Treasury and Economics, and associated interest and foreign exchange considerations were of particular interest to the Board.

10.2 The Borrowing Program

Hydro's proposed 1989 net borrowing requirement of about $3 billion was determined by summing its proposed investment in fixed assets, its debt retirement and cash-related changes in other assets and liabilities, and then subtracting Funds from Operations which are forecast to result from its proposed rate levels less all other cash costs (essentially net income and adjustments for non-cash costs such as depreciation and amortization).

In argument, Staff Counsel referred to certain recent improvements Hydro had made in its Borrowing Program management. This year, for example, Hydro gave evidence at the hearing of strategies and programs having been developed and approved for 1989, and of increased senior management involvement in all aspects of the Borrowing Program's activities.

During the 1980s, substantial differences between Hydro's projected net borrowings and those which actually took place indicated that such improvements were necessary. Staff Counsel argued that these discrepancies had occurred because: a) financing and investing decisions were not well co-ordinated, and b) Hydro could essentially borrow what was needed to "make right" the budgeted capital and other expenditures not collected in actual revenues. He also felt that the 10% target level for the amount of outstanding floating rate debt was arbitrarily selected, and recommended that some attempt be made to develop more rationally-based criteria for selecting such a target.

Energy Probe submitted that a risk averse strategy for Hydro's borrowing program is consistent with its obligations. It indicated considerable concern with respect to communications at the decision-making level which it described as lacking in informed dialogue. An absence of input from the Economics and Load Forecasting Division was particularly apparent. As well, there was no systematic procedure to ensure continuity and timeliness of communications between the Ministry of Treasury and Economics (MTE) and Hydro.

The Independent Power Producers of Ontario (IPPSO) noted that much of Hydro's new debt is in the two to five year range. It submitted that Hydro should attempt to match its assets to the terms of these bonds. It also argued that if further delays in putting Darlington into service occur, Hydro should consider immediately transferring the interest costs for the construction of these assets to its operating statement. By its calculations, this would result in a rate increase of 8.75% for 1989 were it to be instituted immediately. IPPSO suggested that the MTE learn how to say no to Hydro's request for an approval to borrow.

The Municipal Electric Association (MEA) identified a potential benefit to be gained by Hydro if its Treasury Division communicated better with its Economics and Load Forecasting Division. The MEA also indicated that the advice of the Economics and Load Forecasting Division, and specifically of Hydro's chief economist, should be explicitly sought when Hydro is making hedging decisions. As well, it recommended that Hydro increase its emphasis on long-term markets, and that the Economics and Load Forecasting Division participate in this activity. It requested that Hydro provide measures for assessing term selection, citing approaches used in the private sector to assess borrowing programs which may be appropriate for application by Hydro as well. Finally, the MEA recommended that Hydro report to the Board in HR 18 on the upcoming review of its pension management program by the outside firm of Woods Gordon.

Hydro replied to the criticisms of its borrowing program by asserting that, given the environment, the economic performance of its debt management was acceptable. For example, it considers that a ten percent floating rate target is based on judgement and, as such, always monitored and open to revision; that the mix of long-term and short-term debt is appropriate; that its financing and investing decision-making process are significantly integrated; and its programs and strategies are communicated to and reviewed by the MTE in an acceptable manner.

Board Findings

The Board notes that Hydro's proposed total borrowing in 1989 will be among the largest in recent years, and that coincidentally, because of Darlington, so too will be spending under its capital program. There is a natural link between the two which, on occasion, can be obscured by other factors such as abnormally high liquidity requirements or net income changes.

While this Board has thoroughly examined the costs associated with Hydro's borrowing program over the years, it has not examined one fundamental underlying cause of changes in the borrowing requirement, namely the capital program. This responsibility has been given to others. For example, at present a review of the Demand Supply Planning Strategy (DSPS) study is underway by the Select Committee of the Legislature. So long as this Board cannot meaningfully examine major causes of the debt requirement, it cannot fully review the appropriateness of expenses which arise from it.

Also, of concern to the Board as well is the fact that Hydro does not compete for funds with other institutions in the traditional sense in that the provincial government guarantee "shields" Hydro from the market to a substantial degree. Thus, if there is an over-run of the total budget, it is all too easy to go to the market to "make good" the shortfall.

This Board, in its report last year, attempted to take the first step in the process of making Hydro accountable to some external discipline when it recommended that Hydro pay a fee to the Government of Ontario for the debt guarantee, and showed how it might be calculated. It also pointed out that until the appropriate approach to calculating the cost of capital is adopted by Hydro, no one should infer that the appropriate mechanisms are in place to induce appropriate borrowing decisions by Hydro. The Board was also not completely satisfied with the explanation of the swings in net borrowings over the last ten years.

During the proceedings, concern was expressed over Hydro's intentions with respect to reducing its total debt. Hydro was asked if it would use its proposed higher level of net income for 1989 to pay down some debt. The answer was, of course, yes, by definition. All other things being equal, higher levels of net income will always cause Hydro to borrow less.

In the Board's view, if Hydro's level of borrowing is of concern to the public, it must be symptomatic of other more fundamental concerns, such as costs other than net income which are generally too high, and a level of net income which is generally too low. Proper attention to these fundamental factors of cost control and adequate levels of net income is really what is required to reduce borrowings.

Recommendation 35

> **The Board repeats its recommendation to the Minister made in HR 16, namely that Hydro be required to pay the Province of Ontario each year for the value of the province's guarantee of Hydro's debt.**

> **The Board estimates that the payment, updated for 1989, should be $25 million. It has adjusted the revenue requirement accordingly.**

Recommendation 36

> **The Board is encouraged that more communication is taking place both within Hydro, and between the Government of Ontario and Hydro, concerning the borrowing program. The Board recommends that the Government of Ontario continue to press for active input into the borrowing plans of Hydro.**

10.3 Interest Expenses

Expected net interest expenses on Hydro's debt for 1989 of $1.9 billion represent the total cost of borrowing ($3 billion), less capitalized interest and other adjustments ($1.1 billion). Thus, approximately one-third of Hydro's 1989 gross interest expenses ($3 billion) is to be capitalized and will not burden 1989 rates. To grasp the magnitude of the capitalized interest, were it recovered in 1989 rates, an increase of approximately 20% in rates would be required rather than the proposed 5.5% presently proposed.

As it is, and quite rightly so in concept, these costs will be borne by future generations that use the facilities being constructed today. When the new facilities are placed in service, the associated interest will no longer be capitalized but rather will be charged to current operations at that time. The rate impact of that interest expense will be mitigated only to the extent that revenues increase due to increased sales, or total average system costs decrease due to increased efficiency of the new plant in service. Often neither of these effects fully mitigates the impact of the interest charged to operations in the first year in which a new plant comes into service and, for at least a period of time, there is an adverse rate impact.

The Board heard evidence in HR 15 that, for both demand-management and financial-soundness reasons, some US utilities have elected not to capitalize interest but rather to pay for the return on construction-work-in-progress in current rates. Since it can lead to a better matching of costs over time, the Board has continued to favour Hydro's approach of capitalizing interest during construction. As noted, it has, however, tried to persuade Hydro to recover something closer to its full cost of capital, both for the sake of "demand management", and for fundamental concerns about the inequity and unfairness of not doing so.

The major components of Hydro's interest expense control program within the borrowing program itself, are the Debt Restructuring and the Spread Management programs. Through its Debt Restructuring Program, Hydro aims to reduce debt service costs and diversify interest rate risk through refinancing callable bond issues and undertaking interest rate swaps in order to increase the amount of floating rate debt. Its Spread Management Program makes net purchases of outstanding Hydro debt to increase the marketability and liquidity of the Corporation's debt and, hence, to reduce yield spreads. Also, Hydro carries out a trading program in Hydro and Government of Canada bond issues in order to reduce the volatility and magnitude of yield spread and, hence, borrowing costs.

Staff Counsel was concerned that the Debt Management Program had shown declining economic performance over the 1985-87 period. He recommended that Hydro review the economics of this program internally and report on its findings to the Board in HR 18. With respect to the Spread Management Program, he recognized that it is indeed generating a net benefit to the Corporation but reminded Hydro that it is an operating company first, and a financial institution second, if at all. He submitted that Hydro should continue to refine and monitor the costs and benefits of this program, and to maintain tight control over its trading volumes.

Board Findings

The Board expects to review the economic performance of the Debt Management Program in HR 18.

10.4 Foreign Exchange Expenses

Foreign exchange gains and losses at Hydro occur primarily as a result of changes in the value of debt denominated in a foreign currency. These changes are caused by movements in exchange rates. To a lesser extent, foreign exchange gains and losses also occur with respect to Hydro's purchases and sales of commitments made in another currency, be they for electricity sold or supplies and services purchased in other currencies.

However, the major portion of annual foreign exchange costs is based on the net unrealized exchange loss arising from the translation of all foreign long-term debt at current exchange rates into Canadian dollars. This unrealized loss is amortized over the remaining life of the debt to determine the foreign exchange costs charged to current operations. This foreign exchange cost for 1989 (accruing from earlier losses which have been amortized) is forecast to be $41 million, as updated, reflecting minor offsetting changes from 1988, but particularly a major improvement in foreign exchange expense from 1987 due to the overall improvement in the Canadian dollar since that year.

Hydro's recently revised Foreign Exchange Management Policy aims at managing this "exposure" to foreign exchange movements by "hedging" debt, i.e. by locking-in the interest expense in Canadian dollars. Under its Long-Term Hedging Program, Hydro will set its long-term target range for hedging US dollar exposure at 0-50%, with any target above 25% requiring advance approval by Hydro's Board. Hydro bases its appropriate target on the time horizon of the exposure to be hedged, and on a comparison of current and historical hedging costs vis à vis the volatility of the Canadian dollar. For example, given market conditions at the beginning of 1988, the hedging target was set at 15% of the debt exposure, and the time horizon of hedging for maturities at no greater than five years.

Hydro also has a current year hedging program (Current Year Foreign Exchange Management Program) which it operates on a rolling twelve month basis. It is designed to reduce the cost of US dollar requirements over the next twelve months, either by reducing existing hedges or by adding new hedges (depending on management's view of Canadian dollar values). The policy permits a hedging range from zero to twice the long-term percentage target.

Finally, Hydro also has a non-US dollar hedging program which extends to 1990 and has a hedging target range of 0-100% of maturities due within that period. It also will engage in special hedging programs if the situation warrants, as indeed it did this year immediately prior to the hearing.

Staff Counsel stated that there was evidently some confusion with respect to Hydro's stated hedging decision rules. Hydro claimed to set hedging targets based on costs, yet the Special Hedging Program this year was justified by Hydro as a judgement call based on an attempt to take advantage of what Hydro felt was an overvalued dollar. Staff Counsel argued, therefore, that Hydro should review its hedging decision rules. The Association of Major Power Consumers in Ontario (AMPCO) felt that relying on comparisons between current and historical data in developing hedging targets was a sound approach. It said that Hydro should consider doing the same when determining targets for floating rate debt levels.

The MEA noted that Hydro's hedging strategy had in the past been based on the principle in economics of "purchasing power parity" (PPP). This approach had recently been abandoned by Hydro. The MEA argued, however, that the use of the PPP principle is appropriate to determining long-term hedging strategies and should be reintroduced. In future, the MEA also wished to see evaluations of the financial benefits and losses due to the hedging program. In particular, it felt that Hydro was unaware of the depth of foreign exchange forward markets and their extensive hedging potential. Finally, the MEA and others noted that at least on the basis of the evidence presented, this year's decision to undertake the Special Hedging Program had been a good one.

Board Findings

The Board is pleased that Hydro has developed a whole range of programs to manage foreign exchange costs, with a sufficient degree of flexibility to allow something like the Special Hedging Program which took place this year to take precedent.

However, it would warn about "going against the system" too many times even if Hydro takes the trouble, as it did, to ensure that everyone up to the Board of Directors thinks it a good thing. Hydro, like the OEB, must surely be aware that the financial markets of this world are filled with the ghosts of those who played hunches on exchange rate movements one-too-many times. Hedging programs are essentially a form of insurance and, as such, should have the objective of minimizing cost for the value obtained, not to supplement revenues or achieve important one-time gains. Acknowledging that a decision to hedge involves uncertainty, the Board is concerned that the analysis used to support such a Special Hedging decision was not clear or convincing. The basis on which the Corporation would entertain a Special Hedging Program should be clear to all. Also unclear were the criteria Hydro used to decide on cost minimizing alternatives with respect to when, how much, and which vehicle to use, to hedge.

Recommendation 37

The Board recommends that Hydro file, for HR 18, a report clarifying, by the use of several specific examples over various maturities, exactly how it makes a cost minimizing decision about what it will hedge. Hydro should also provide the exact description of the conditions under which it would entertain another Special Hedging Program.

11. NET INCOME

11.1 Introduction

This chapter addresses the appropriate level of net income which Hydro should seek to recover in its rates design for 1989.

In HR 15 and HR 16, the Board has made recommendations concerning the methodology and approaches which should be taken to determine the appropriate level of net income. Hydro currently does not use conventional concepts of the cost of equity capital when determining net income. The Board in those reports found that, since, in accordance with the Power Corporation Act (PCA), net income is made up of "cost" components to be recovered through rates, appropriate concepts of cost should be brought to bear in determining the appropriate level of net income. The Board recognized the broad discretion given to Hydro's Board of Directors in determining net income, but suggested that in exercising its discretion Hydro's Board should consider conventionally relevant concepts of cost.

Hydro resisted the proposal, and in HR 16 referred the Board to the "Nepean" case: Supreme Court of Canada Decision in Hydro-Electric Commission of the Township of Nepean v. Ontario Hydro (1978), 92 D.L.R. (3d) 481 (Ont. H.C.J.); affirmed (1980), 107 D.L.R. (3d) 257 (Ont C.A.); affirmed (1982), 132 D.L.R. (3d) 193 (S.C.C.). Hydro claimed that the Supreme Court's finding in that case ruled out the consideration of equity costs in the determination of net income.

This Board concluded that Hydro had misinterpreted the Nepean case and its relevance (see Chapter 13: Cost Allocation and Rate Design for certain observations on the relevance of the Nepean case). But in its response to the Minister concerning the Board's HR 16 report, Hydro held to its argued position that the case precluded the consideration of market-based costs of capital in determining net income.

The Minister, in referring Hydro's 1989 rate proposal to the Board, indicated to the Board:

> As the recommendations relating to net income policy contained in the previous report on 1988 rates are still under review by the Government, the use of market-based rate of return as a means of planning net income should not be re-examined.

The Board has agreed with the view of the Minister, especially since the methodology has been thoroughly investigated by the Board in HR 15 and HR 16. However, it should be emphasized that the Board continues to hold the views expressed in HR 16. These are best summarized in the Introduction to Chapter 11 of HR 16.

Essentially, the Board holds the view that Hydro's equity capital has a cost and that net income for ratemaking should be set to recover that cost. Just as, over time, market-based concepts of debt determine debt costs (interest expense), market-based concepts of equity should determine equity costs, i.e. net income. In the Board's view, this is not only permitted in law, but is wise, sensible, efficient and achievable.

11.2 Hydro's Methodology and Proposal

In determining net income Hydro considers "the size and pattern of rate increases" (otherwise known as "rate smoothing"), the availability of capital, and "financial performance" as indicated by the level and quality of interest coverage, the debt ratio, and the cash flow coverage ratio.

The level and quality of interest coverage indicate Hydro's ability to meet its gross interest payments. The debt ratio indicates the extent to which Hydro's assets are financed with debt capital. The cash flow coverage ratio measures the extent to which Hydro's operations provide cash to meet gross interest payments.

Hydro sets a net income "target" based on providing a coverage of 1.05 times interest charged to operations, a coverage of 1.50 times interest capitalized, and a minimum cash flow coverage of 1.0. On the basis of capital availability and "rate smoothing" it then decides whether to seek to achieve more or less than its target through proposed rates.

For 1989, capital availability was not expected to be a constraint in planning the ratemaking level of net income. However, an outlook for 1990 which suggested an even greater increase in underlying unit costs, a perceived need to cope with uncertainty in 1989 cost forecasts, a recognition that rate increases had been constrained for several years (resulting in net income being below target), and "a determination to achieve and maintain, on average, a more appropriate level of net income", all combined to cause Hydro to propose a level of net income of $684 million which this year would be 117% of target. By the end of the hearing this planned level of net income was updated to $741 million.

The Municipal Electric Association (MEA) has argued that Hydro should strengthen the ratios used to determine target net income such that the "level of interest coverage" ratio would be increased from 1.05 to 1.10, and the "quality of interest" ratio (capitalized interest) would be increased from 1.5 to 1.6. It noted that, if adopted, Hydro's debt ratio could return gradually by 1995 to levels which were forecast by Hydro when it adopted its financial soundness ratios in HR 12.

The MEA also noted that, "as Hydro's total assets grow and as inflation continues, one should expect net income to continue to increase". It urged the Board to recommend that Hydro strive to pay down its total debt and reduce future borrowing requirements. It submitted that recent increases in net income, "are not significant when compared to Hydro's debt. With the Ontario economy booming, there is no better time to apply these gains toward debt reduction rather than towards the reduction of rates". The MEA submitted that a level of net income of $778 million would be appropriate.

Both the Consumers Association of Canada (CAC) and Staff Counsel made reference in their arguments to the statutory provision for debt retirement. This is a provision accumulated as "equity" on Hydro's balance sheet and earmarked for the retirement of debt.

Under examination at the hearing, Hydro's Senior Vice-President of Finance, Mr. Burdette, acknowledged the arbitrariness of the statutory provision for the retirement of debt. Although he took some comfort in having a level of net income greater than this statutory provision, he confirmed that, essentially, in any year that Hydro seeks a net income which is less than the statutory provision with respect to the retirement of debt, it simply specifies a negative target with respect to the provision for the stabilization of rates and contingencies which is also a statutory provision.

In the Board's view, until the statutory provision for stabilization of rates and contingencies "runs dry", the statutory provision for the retirement of debt is not a limiting condition on net income under the Power Corporation Act. The provision is, at best, a weak "floor" which one can pass through and back. In the early days of Hydro, when there was a very small rate stabilization reserve, the statutory provision with respect to debt retirement may well have been a more important and significant floor. Were the rate stabilization reserve to be wiped out by a major event, statutory provision for debt retirement might once again become a firm floor on net income. However, during this current period of time, it is too weak a floor on which to rest a recommendation of the appropriate levels of net income.

Staff Counsel attempted to use the statutory provision for debt retirement to define what he called a "bare bones" level of net income of $367 million, as an alternative to an upper limit of $713 million associated with a 5% rate increase.

In the Board's view, a "bare bones" level of net income might also be defined in terms of achieving a cash coverage of 1.0, as discussed with Hydro's Mr. Colgrove during the hearing. Mr. Colgrove agreed that by simply satisfying the "cash coverage equals 1.0" condition, Hydro could this year plan to achieve a negative net income, i.e. a loss.

In the Board's view, however, neither "bare bones" approach is an appropriate way to run a self-sustaining healthy business.

With respect to the recommendations concerning the actual level of net income to be included in rates, the CAC also recommended a level of net income of $367 million consistent with the statutory provision for the retirement of debt.

The Association of Major Power Consumers in Ontario (AMPCO) recommended a level of $630 million, relying on Hydro's improved performance in 1988, submissions with respect to the 4.8% forecast change in the CPI for 1989, its view that Hydro presented no 1990 evidence to justify its need to rate smooth, and certain submissions concerning what should be included in Hydro's financial ratios.

Board Findings

The Board has found it useful to monitor the development of Hydro's net income proposals against the amount budgeted and achieved, and has continued this exercise in Table 11.1. As in the previous years shown in the table, Hydro in 1987 chose to accept a level of net income for 1988 lower than that recommended by the Board, and then budgeted for even less. Fortunately, unlike previous years, Hydro achieved and exceeded its budgeted net income. The Board encourages Hydro to

Table 11.1

LEVEL OF NET INCOME

($ millions)

	Original Submission	Board's Recommend-ation	Hydro's Response	Hydro's Actual Budget	Actual
1986 rates(1)	400	500	460	330	247
1987 rates	294(2)	400(2)	320(3)	243(4)	261(5)
1988 rates	413(6)	515(6)	487(7)	467(8)	612(9)
1989 rates	684(10)	741(9)	-	-	-

Notes:

(1) 1986 numbers from Exhibit 9.2.17, HR 16
(2) Report of the Board, HR 15
(3) Exhibit 1.3.5, HR 16
(4) Ontario Hydro fiscal 1987 budget
(5) Exhibit 1.1.9 -- current estimate, HR 16
(6) Report of the Board, HR 16
(7) Exhibit 1.1.7, HR 17
(8) Exhibit 4.12, HR 17
(9) Exhibit 7.1.0, June 29/88 update, HR 17 - current estimate
(10) Exhibit 1.1.0, Table 1-4, HR 17

continue to budget higher levels of net income in accordance with the standards which this Board has set, and to strive to achieve them.

Although possibly differing from the Board in its approach to net income for 1989, Hydro's updated proposal of $741 million, resulting from a 5.5% rate increase, has come very close in "end result" to a level of net income which the Board, applying a market-based test, would consider appropriate. However, while achieving an appropriate end result in the rate year, it is apparently a coincidence which, according to Hydro, results from "rate smoothing" and which, based on Hydro forecasts, will not recur in HR 18.

Both the Board and Hydro agree on the importance of rate stability, and hence on the importance of "rate smoothing" from year to year. The Board can also accept the view that rate stability takes precedence over stability of returns from year to year. Thus, while targetting an appropriate level of net income, averaged over several years, Hydro and the taxpayers of this province (who, in concept, have a claim to ownership of Hydro) can accept year-by-year overages and underages with respect to that appropriate level of net income.

The Board can also accept the relevance of considering the financial ratios (interest coverage ratios and debt ratio) proposed by Hydro and examined at length in previous reports of this Board. It is appropriate to examine the ratios when considering financial soundness for the purpose of raising debt capital. In the Board's view, however, Hydro's financial ratios assist in establishing minimum levels of net income, not necessarily appropriate levels.

The Board sees merit in the MEA's approach and in its arguments. In the Board's view, Hydro's current financial ratios should be strengthened if Hydro is to be an entity which can "stand alone" without external support from the province.

The Board also notes that, in effect, as long as Hydro has debt, the target level of net income can be raised to appropriate levels by simply raising the targets determined for interest coverage ratios. In the Board's view, however, this would not obviate the need to look beyond these ratios first in order to determine what the appropriate level of net income should be. Having "looked beyond", one can, of course, rationalize the level on the basis of calling for higher interest coverage targets.

Hydro's updated proposed net income for 1989 of $741 million amounts to a return on average equity of the order of 12.5%. This satisfies one of the Board's standards enunciated previously: that net income, which for ratemaking purposes is the cost of Hydro's equity, should, as a percentage of Hydro's equity, exceed the percentage cost of Hydro's debt.

The Board has not examined the cost of Hydro's equity capital this year, and is unable to say with any precision how much higher it should be than the cost of Hydro's debt. Nonetheless, Hydro's proposed level of net income appears directionally correct and furthermore, it approaches the MEA's proposed new target levels for Hydro's financial ratios, which the Board sees merit in adopting at this time.

Recommendation 38

> **Without re-examining market-based approaches to the cost of Hydro's equity capital, and relying on the submissions of parties this year, the Board recommends adoption of Hydro's proposed level of net income for 1989 ratemaking, as updated, i.e. $741 million.**

12. NON-ONTARIO HYDRO GENERATION SOURCES

12.1 Introduction

In HR 16 (1987) the Board devoted considerable effort to the examination of the issue of non-Ontario Hydro generation of electricity, what is often called "parallel generation". Simply put, parallel generation is the generation of electricity in Ontario by a party other than Hydro. The electricity may be sold to Hydro or be used by the party which generates it. When electricity is produced in conjunction with another product, such as steam, the process is also referred to as co-generation. While the independent power industry is still in its infancy in Ontario, it is clearly one of growing importance.

Because this subject was examined in detail last year in HR 16, the Board restricted itself this year to reviewing only two issues: what progress, if any, Hydro had made in implementing the Board's recommendations in HR 16, and what buy-back rates Hydro was proposing for 1989.

12.2 HR 16 Recommendations Concerning Parallel Generation

The Board made four recommendations last year in HR 16 concerning parallel generation. They were as follows:

Recommendation 11

> The Board recommends that the Minister call for a special hearing to examine the issues relating to parallel generation. The Board recommends that the hearing be held in the fall of 1987 to examine at least the following issues:
>
> 1. The determination of buy-back rates;
> 2. Standardization of contracts;
> 3. Interconnection standards;
> 4. Arbitration provisions; and
> 5. Power wheeling.

Recommendation 12

> The Board recommends that the Minister designate an independent arbitrator to resolve problems and issues between Hydro and parallel generators until such time as a hearing has been held and the recommendations therefrom have been accepted by the Minister.

Recommendation 13

> The Board recommends a separate Parallel Generation Branch be established within Hydro. The Branch should be given the authority, and the technical and legal expertise, to carry out all necessary negotiations to finalize an agreement with an independent producer.

Recommendation 14

> The Board recommends that Hydro issue forthwith a simple, short, and clear statement of its positions on various aspects of parallel generation such as the methodology involved in calculating, and the level of, buy-back rates, interconnection standards, etc.

The Board was pleased to learn that throughout the past year Hydro has responded positively to Recommendations 13 and 14. It has set up a separate division reporting to the Corporate Planning Branch which, while not completely satisfactory to The Independent Power Producers of Ontario (IPPSO), nonetheless addresses many of the concerns raised in last year's proceeding. As well, Hydro has issued a summary of some of its positions on major issues associated with parallel generation.

To date, Recommendations 11 and 12 of HR 16 have not been acted upon by the Minister. Thus, important segments of the parallel generation industry have had no forum for a review of the many issues they wish considered. IPPSO, for example, intervened actively to have the hearing pursue such questions as buy-back rates, standardization of contracts, arbitration, interconnection standards and wheeling. The Waterpower Association of Ontario, while not advocating lengthy hearings, also expressed an interest in the issue of buy-back rates.

While many of these questions are very important, the Board had little alternative but to consider that they were tangential to the main purpose of the hearing this year and so could not be heard.

12.3 Proposed Buy-Back Rates for 1989

As the foregoing suggests, the Board could not consider in depth the question of the appropriateness of the proposed buy-back rates for 1989. Buy-back rates are the rates which Hydro proposes to offer to "buy-back" electricity from the independent power producers (they are proposed rates because the actual rates are set unilaterally by Hydro in the fall, well after the Board's hearing has been concluded).

IPPSO stated that the proposed buy-back rates were too low because they ignored charges to capital in the calculation of Hydro's avoided cost. Moreover they said the rates should be regionally differentiated. Hydro replied that the proposed rates included all appropriate costs and thus represented the true short-run marginal costs to the system of bought-back electricity.

Energy Probe raised the point that since, in the near term at least, the bulk of co-generated power is expected to come from power generated for the parties' own uses, the rates Hydro charges these customers, rather than the rates at which it is prepared to buy power, may be the more important economic consideration. The Consumers Association of Canada (CAC) pointed out that while loans to co-generators to offset the actual rates paid (something Hydro is planning) are a good thing, care must be taken to ensure that the appropriate internal rates of return are used as a basis for the interest rates charged. Otherwise, Hydro may end up unduly subsidizing the project.

Staff Counsel questioned Hydro's estimate of the amount of co-generation capacity that would be on-line in 1989, arguing that, since 1988's estimate was grossly under-estimated, one could have little confidence in the forecast of 1989, especially if this loan program were at all successful. Hydro, in its reply argument, strongly defended its estimates.

Board Findings

The Board is at present unable to assess the potential for non-Ontario Hydro generation of electricity. Furthermore, it is unable to comment on details relating to such generation, in particular on the proposed buy-back rates. But on the basis of representations from many of the parties, as well as the Board's own conclusions, it reiterates its recommendation of last year regarding a special hearing, and urges the Minister to act with haste. This industry is in its infancy but it is nonetheless a potential source of generating capacity. Given the ongoing public review of Hydro's

Demand Supply Planning Strategy (DSPS) study, the potential of parallel generation as a source of power must be understood before any responsible recommendations on Hydro's DSPS proposals as a whole can possibly be made.

The Board is also aware that there are options to formally dedicated parallel generation. Certain utilities in the US Northeast are, for example, offering special rates to institutions such as hospitals who have generators available on a standby basis. In such a situation, the utility pays the institution a rate which is less than the utility's cost of meeting peak demand but greater than the institution's cost of running its generator. This generator would thus be producing electricity coincident with the utility's peak, thereby reducing it. These, and a whole host of other issues surrounding parallel generation and energy management more generally, are in need of consideration.

Recommendation 39

> **The Board recommends that the Minister call for a special hearing to examine the issues relating to parallel generation.**

13. COST ALLOCATION AND RATE DESIGN

13.1 Introduction and Background

Previous chapters of this report have dealt with cost items which are included in the total annual costs which Hydro must recover through rates. This chapter deals with the manner in which Hydro's customers are to be assigned responsibility for paying these costs through rates.

Hydro recognizes three broad service classifications: municipal utilities and distributing companies, direct customers, and rural customers. Before designing specific rates for these customers, Hydro first assigns costs to "functions", arriving at three categories of "functionalized" costs: common costs of generation and transmission of electricity; rural distribution costs; and other "non-common" costs of generation and transmission of electricity. The first category, common costs, is shared by all users of the Hydro system. Rural distribution costs are assigned entirely to the rural customers. Other non-common costs are assigned to customer categories based on the nature of the cost and on the customers' responsibility for the cost incurrence. These include some costs of power transformation, distribution lines, and customer administration, as well as sundry categories to deal with the "large user diversity adjustment" and Hydro's "class deficit recovery" program.

The common costs, which include generation, the "grid", and general categories, are classified as to whether they are "capacity"-related or "energy"-related and are then assigned to time-of-use periods. "Capacity" costs are essentially the costs of being able to produce, transport and deliver energy, whereas "energy" costs are the costs incurred, beyond capacity costs, in order to produce energy (electricity).

Capacity-related common costs are allocated between winter and summer periods. Energy costs are classified both as to winter and summer categories and, within each of these, are further categorized as to daily peak and off-peak.

For each of the customer rate categories, the cost allocation process produces: capacity costs by season, energy costs by season and by peak and off-peak usage, and various apportionments of non-common costs. From these allocated costs, Hydro designs its rates for the customer categories.

The changes which Hydro proposed to make in its cost allocation and rate design are consistent with an agreement it has with two major customer organizations, namely the Municipal Electrical Association (MEA) and The Association of Major Power Consumers in Ontario (AMPCO).

Specifically, Hydro proposed to allocate more common costs to the "energy" category, moving from a capacity/energy split of 50:50 to a split of 42:58. It proposed demand/energy rates, time-differentiated on both the seasonal and time-of-day basis, for large users in municipal utilities and for direct customers of Hydro. It also proposed optional time-of-use (seasonal and time-of-day) rates for municipalities and distribution companies. It also intends to eliminate differences between the rates for municipal utility large users and Hydro's direct customers, other than those differences attributable to local or customer-specific costs, by introducing a "diversity adjustment mechanism" into the cost allocation procedures for rate design. Finally, Hydro proposed that once the rate design proposal is fully implemented (in 1992), it would be maintained for a period of ten years unless conditions indicate that a change in the rate structure is "truly warranted".

The Board, while not bound by Hydro's agreement with the two customer associations, has given due weight to the views of the MEA and AMPCO, as well as to the importance of customer acceptance of Hydro's pricing practices.

Clearly, as the Board has noted in previous reports, the judgement which enters into the cost allocation process is itself an element of "rate design". The principles of "cost behaviour", and the "responsibility for cost incurrence", can be taken only so far within the cost allocation process. With few exceptions, all of Hydro's functionalized costs, even many of those in the non-common category, are common to more than one customer classification. There is much arbitrariness in the allocation of common costs, and the design of rates involves various notions of fairness including past practices and rate levels.

13.2 Hydro's Ratemaking Objectives

Hydro proposed certain changes to its cost allocation and rate design based on achieving the ratemaking objectives which were adopted by its Board of Directors in 1981. Those ratemaking objectives were reviewed by this Board in HR 5 and were not at issue at this year's hearing. They remain fundamental to Hydro's rate design and are:

- rates should recover the annual revenue requirement;
- rates should be fair - broadly defined as those which track costs and assign equal treatment to equals based on cost causality, to the extent feasible and practical;

- rates should encourage efficient use of facilities and resources in the production, distribution and consumption of electricity so as to minimize costs to Ontario Hydro customers over the long term; and
- rate structures should be publicly acceptable and comprehensible, and should be stable and feasible in application.

The Board draws the Minister's attention to two points. First, the third objective establishes that Hydro accepts a responsibility beyond the point of sale to encourage the efficient use of facilities and resources in the consumption of electricity. Second, none of these objectives identifies the need for stability of returns to capital. These two points, to some extent, distinguish Hydro from an investor-owned utility.

13.3 Capacity/Energy Split

The split of costs between "energy" and "capacity" is a guide in rate design. It indicates the level of costs that should be recovered through a variable charge for kilowatt-hours of electricity consumed and the level of costs that should be recovered through a charge for the capacity required to serve peak levels of demand (expressed as a charge per kilowatt of "billing demand").

Hydro used five different methods of allocating costs to capacity and energy categories to develop an overall range of results from 33% to 51% for capacity cost as a percentage of total common costs. It has developed a target allocation of 42% to which it intends to move to from the current level of 50%, by moving to 45% for 1989 and then moving one percentage point per year thereafter until the target split of 42% is reached in 1992.

Board Findings

The Board accepts the view that there is no single "correct" way to apportion accounting costs between capacity and energy, given, among other things, that multiple technologies exist to produce electricity. The Board also accepts the view expressed by Ms. Chown, an expert witness called by Staff Counsel, that specifying a sufficiently high demand charge is a surrogate for time-of-use pricing, so that, by virtue of the introduction of time-of-use pricing, the need for such a level of demand charge may be reduced.

The Board recognizes, as does Hydro, the role of judgement in determining the appropriate capacity/energy split. In the Board's view, the move from an allocation of 50% of common costs to the capacity category, to an allocation of 45%, is appropriate for the purpose of allocating costs for 1989 rate making.

If Hydro can move five percentage points in the first year without adverse impacts, it is hard to believe that it can only move one percentage point in each of the three following years. It is also hard to believe that accelerating this transition would break Hydro's consensus with the MEA and AMPCO. But these are matters which need to be established in HR 18.

The Board notes Hydro's intention to monitor the capacity/energy split using the same five methodologies, and its testimony that, should the results indicate that a significant change in the capacity/energy split is required, then Hydro will take appropriate action.

Recommendation 40

> **The Board recommends that Hydro, for HR 18, reassess the appropriateness of its timetable for implementing changes to the capacity/energy split and address the feasibility of moving more quickly to the target levels, i.e. by 1990.**

13.4 Time-of-Use Rating Periods

13.4.1 Rating Periods Definitions

Hydro proposes four time-of-use periods for allocating the common capacity and energy costs: winter peak, winter off-peak, summer peak and summer off-peak.

Summer would consist of the months April through September inclusive, with winter being the remaining months of October through March. Within each season the peak period would extend from 7:00 a.m. to 11:00 p.m., Monday to Friday, except for public holidays; all other hours would be off-peak.

Both Ms. Chown and the Consumers Association of Canada (CAC) have observed that there may be a need to consider shoulder season periods or super peak periods within the sixteen hour daily peaks in the future.

Board Findings

The Board notes Hydro's intention to review the need to redefine rating periods once sufficient experience has been gained with the new rate structure. For 1989, the Board accepts Hydro's proposed time-of-use rating periods.

Recommendation 41

> **The Board recommends that, for HR 18, Hydro reassess and report on the appropriateness of its time-of-use rating periods.**

13.4.2 Allocation of Costs to Rating Periods

Hydro proposed to set a target for the allocation of capacity-related common costs to the seasonal peak periods so as to result in a winter peak unit cost being

40% higher than the summer peak unit cost. For energy-related common costs it establishes targets for the allocation to seasonal peak and off-peak periods so as to result in a winter peak unit cost being 25% higher than the winter off-peak unit cost, the summer peak unit cost being 60% higher than the summer off-peak unit cost, and the average winter unit cost being 25% higher than the average summer unit cost.

Analogous to the phase-in of the change in the capacity/energy split, Hydro proposes to achieve five-eighths of these differentials in 1989 (i.e. 25%, 16%, 38% and 16% respectively) and to move linearly toward the target percentages by 1992, one-eighth further each year.

Board Findings

As in the case of the change in the capacity/energy split, if Hydro can indeed move five-eighths of the way in the first year, without adverse impact, it is hard to believe that it can only move one-eighth further in each of the following three years. For 1989, the Board finds acceptable Hydro's proposal to set the differential between seasonal peaks for capacity-related common costs so that the winter peak unit cost would exceed the summer peak unit cost by 25%, and to set the differentials for energy-related common costs so that the winter peak unit cost exceeds the winter off-peak unit cost by 16%, the summer peak unit cost exceeds the summer off-peak unit cost by 38%, and the average winter unit cost exceeds the average summer unit cost by 16%.

Recommendation 42

> **The Board recommends that, for HR 18, Hydro reassess and report on the appropriateness of its timetable for implementing changes to the time-of-use costing differentials between seasonal and daily peak and off-peak usage, and address the feasibility of moving more quickly to the target levels, i.e. by 1990.**

The Board also understands that, within the class of service for municipalities and distribution companies, at least after 1989 when response data to time-of-use rates are available, Hydro will apply its cost allocation methods to two separate sub-classes: those municipalities and distribution companies that opt for time-of-use rates, and those that do not. The Board finds this appropriate since, by doing so, any benefits of time-of-use ratemaking will flow to those customers which create them.

13.5 Diversity Adjustments

According to Hydro's current rate design practices, large users served from municipalities have paid about 6% more for electricity than direct customers of Hydro with similar characteristics. Hydro proposed to introduce a "diversity adjustment" mechanism in its cost allocation procedures to eliminate differences between rates charged to municipal large users and Hydro's direct customers, other than those attributable to local or customer-specific costs. Essentially, this amounts to equalizing the wholesale costs of electricity to all large users. No party to the hearing took issue with this proposal.

Board Findings

In the Board's view, this diversity adjustment is a rational and appropriate step towards the principle of "equal treatment of equals" applied at the level of the end user of electricity rather than simply at the level of Hydro's "customers".

As noted in section 13.2, Hydro's ratemaking objectives extend beyond Hydro to the public interest of the Province of Ontario. The Board agrees that this is indeed a case where interests beyond Hydro and its "customers" should be considered and, hence, finds Hydro's diversity adjustment appropriate. This would be one of the matters which would be considered should the Province accept this Board's recommendations from previous reports, and from section 13.8 of this report, to examine pricing of electricity at the end-user level in Ontario.

13.6 The "Ten-Year Period of Rate Stability"

Hydro intends that, once the rate proposal was fully implemented in 1992, there should be a period of ten years of stability in the costing and pricing structure, during which time rate structure changes would not be made unless conditions indicate that they are "truly warranted".

Given the long-standing fundamental objective of "rate stability", and the patent good sense of not making changes unless they are "truly warranted", it would be hard to disagree with Hydro's proposal. The difficulty which the Board has with it is that it has watched a similar laudable objective which Hydro adopted in the past (namely, "no real rate increases in the 1980s") become a strait-jacket which Hydro felt compelled to wear.

During the proceedings, the ten-year period of rate stability was referred to as the "ten-year freeze". Some of the parties, as well as Ms. Chown, clearly feared that this otherwise desirable objective could restrict Hydro from making appropriate changes. They drew the Board's attention to the importance of making changes gradually, and expressed a concern that Hydro's policy might mean essentially no changes for ten years or more, and then a need for another substantial change.

AMPCO, which supported the "freeze", expressed a specific concern that Hydro not indulge in minor tinkering. The appropriate distinction between "minor tinkering" with rate design and appropriate changes to rate design will always be a matter of judgement. However, as an example, the Board notes that the change in the capacity/energy split referred to above and the introduction of 1989 targets for time-of-use rate differentials both constitute appropriate levels of change, and that going the remaining distance to the eventual target levels would also constitute an appropriate level of change, but that breaking down the second change into small one-year changes might well be considered to be minor tinkering which could be avoided.

The Board is also aware of the growth in private power generation and the need of major "grid" systems such as Hydro's to develop pure transportation rates for electricity similar to the transportation rates developed for natural gas. The Board anticipates that such a need could lead to revised approaches to cost allocation well within the next decade.

13.7 Special Condition Classification Rates

Hydro proposed to continue special condition classification rates in 1989, removing the rate for short-term scheduled-hour power, but continuing the Mechanical Pulping Rate (MPR). In HR 16 the Board found the MPR to be an apparently discriminatory rate and recommended against its implementation.

Special condition rates have also been reviewed by the Board in previous proceedings. According to Hydro, special condition rates are designed to encourage new load, i.e. load which would not otherwise have occurred, during periods when surplus base-load generation is available. Special condition rates are cost-based to the extent that they recover incremental costs.

In its HR 16 report, the Board recounted its views from previous proceedings and observed:

> Until this year, conditions used to define rate classifications have included time-of-use, geographical region, and interruptability, all of which arguably relate to costs to Hydro. As well, the ability of the electricity user to switch to another fuel, i.e., a competitive alternative has also been a condition for defining rates. Provided the rates charged have exceeded the incremental costs for each of these special condition rate classifications, averaged over an appropriate period of time, and have met the other "principles" enumerated by the Board in H.R.13, the Board has accepted these rates, with caution and with the intention to continue monitoring Hydro's experience with the rates.

With respect to the introduction of the MPR to encourage the early conversion of pulp and paper mills to mechanical pulping, the Board expressed concern over the impact the rate would have, both in fact and in appearance.

Board Findings

The MPR is to be initiated in 1989. Currently, in 1988, there are no sales under the MPR. The MEA has expressed the view that these rates are unattractive, ineffective, and become redundant in the presence of time-of-use rates. The Board agrees.

Furthermore, special condition rates are useful only to the point that excess base-load generation exists, that they cover the incremental costs, and that they contribute to overhead. Mr. Franklin, the President and Chairman of Hydro, observed that "... we are coming to a point in time where there will not be excessive capacity and we will not be able to offer these kinds of extended rates".

It is the Board's view that introducing this rate under these conditions is inappropriate. If it is in the public interest to have the pulp and paper industry convert to mechanical pulping, incentives other than special end-use electricity rates should be devised.

Recommendation 43

> **The Board recommends that special condition rates be eliminated with due observance to existing contractual obligations.**

13.8 Time-of-Use Pricing for End Users

Hydro takes the position that the benefits of adopting the rate structure proposal do not depend on extending time-of-use pricing to all retail end users. Nonetheless, Hydro has mandated that all direct customers, as well as large users served by municipal utilities, be placed on time-of-use rates at the retail level. Furthermore, Hydro is already working on "a package of optional rates for utilities who wish to promote the time-of-use rate". This work is being conducted in conjunction with the MEA.

The MEA submitted that it is not the mandate of this Board to review or inquire into the retail rates of the municipalities, per se.

Board Findings

To the extent that it would be necessary to inquire into the retail rates of the municipalities in order to assess Hydro's bulk power rate proposal, this Board has no doubt about its authority to do so. However, the Board can make a finding and recommendation regarding the introduction of time-of-use rates at the bulk power level at this time without further consideration of municipal retail rates.

The Board notes the view, expressed by Hydro and others, that metering costs at this time would outweigh the benefits of introducing time-of-use rates to small retail users, and that seasonal rates at the retail level without time-of-day rates would be inappropriate because those who are most "penalized" by the introduction of seasonal rates, would not have the corresponding opportunity to benefit from reduced rates at off-peak hours of the day.

In both HR 15 and HR 16 the Board recommended a review of principles and practices appropriate for electricity rate design in Ontario. The Board continues to believe in the importance of price in the marketing of electricity in Ontario. Price, as noted in Chapter 6: Energy Management, is an especially important consideration in the context of "demand management". In the Board's view, there should be a public forum in which electricity prices beyond the bulk power rate level in the Province as a whole can be reviewed.

Recommendation 44

> **The Board repeats its recommendation of previous reports that Hydro, a supplier of bulk power and the regulator of municipal distribution rates, should prepare a report outlining its objectives, principles and practices with respect to end-use pricing of electricity in Ontario, together with any proposals for change; that the report should be filed with the Minister within six months from the date of this report, for public access and consideration.**

Recommendation 45

> **The Board recommends that the Minister refer to it, for public review and recommendations, the full issue of cost allocation and rate design for retail electricity pricing in Ontario.**

13.9 Hydro's Class Deficit Recovery Scheme

The issue of the appropriateness of Hydro's class deficit recovery scheme was documented and reviewed extensively in HR 16. Under this scheme, Hydro shifts costs among the customer classes in order to make up for any deemed under- or over-recovery of revenue from direct sales and rural classes in past years.

The Board expressed the view that both as a matter of law based on the Nepean case (op. cit.) and as a matter of good ratemaking practices in this and other jurisdictions with which the Board is familiar, Hydro should simply make its best forecast of class revenue requirements, set rates in an attempt to achieve those revenues, and accept the variances which naturally will result.

During this year's proceeding Staff Counsel argued that the Board should recommend to the Minister that the appropriateness of permitting or not permitting this class deficit recovery scheme be included in the review of the Power Corporation Act (PCA) presently underway. Hydro in reply argument stated that it "... already has the authority to refund surpluses/recover deficits under Section 15 of the Power Corporation Act".

In the Board's view, if Section 15 of the PCA were sufficient to permit Hydro's redistributive scheme among customer classes, the Supreme Court of Canada in the Nepean case might well have found it sufficient to justify Hydro's redistributive scheme among municipalities, which was the subject of that case and which the Court unequivocally rejected.

In the Board's view, the PCA is indeed restrictive in its silence with respect to permitting Hydro to indulge in redistributive schemes such as that in "Nepean", and the current class deficit recovery scheme. A public utilities board fixing the rates of any public utility would normally have more flexibility. However, the Legislature may have intended to be more restrictive in the case of Hydro, recognizing that Hydro was being given the power to set its own rates and that there should be some limitations on that power.

Board Findings

Based on the Board's interpretation of the Supreme Court decision in the case of Nepean, Hydro does not have the power to engage in its class deficit recovery scheme. Further, it is the Board's view that Hydro should not engage in this scheme in any event.

Recommendation 46

> **The Board recommends to the Minister that the question of Hydro's class deficit recovery scheme be reviewed by the Minister when considering amendments to the Power Corporation Act, together with the broader question of the degree of flexibility and discretion the Government of Ontario wishes to grant Hydro in the use of such redistributive schemes.**

14. THE HEARING

14.1 The Reference

Hydro outlined its proposal for bulk power rates to become effective January 1, 1989, in a letter to The Honourable Robert Wong, Minister of Energy, dated April 18, 1988. In a letter from the Minister dated April 19, 1988, Hydro's rate proposal was referred to the Board pursuant to Section 37 of the Ontario Energy Board Act (the Act).

The Board was asked by the Minister to examine and report on Hydro's manner of determining the revenue requirement for 1989 and whether it is as low as feasible. He indicated that the Board, in making its recommendations, should ensure that Hydro's financial soundness has been maintained, that its ability to attract capital at favourable rates has not been impaired, and that its reliability and the quality of its services to its customers has not been compromised. The Minister's letter also indicated that the Board should not review a) Hydro's Demand Supply Planning

Strategy study, and b) the use of a market-based rate of return as a means of planning net income. The Minister particularly asked the Board to review the proposal for rate structure reform in order to ensure that it results in a fair and equitable allocation of costs among all customers.

14.2 Procedures

On April 19, 1988, the Board issued Procedural Order 1 which ordered the hearing to commence on May 16, 1988, a day which was to be set aside to define issues for the hearing, and to deal with other procedural matters. It also outlined the procedures for intervening and pre-filing evidence, and described the interrogatory process. Other hearing days established in Procedural Order 1 were: May 24, 1988, to hear motions on interrogatories; and May 30, 1988, to begin hearing evidence. Procedural Order 1 also directed Hydro to publish the Board's Notice of Public Hearing in all Ontario daily newspapers.

Procedural Order 2 was issued May 16, 1988, to establish the order of cross-examination and define the issues to be examined and investigated.

The Board, in session, established: on June 9, 1988, that Argument would be written; on June 15, 1988, what its format would be; and on June 24, 1988, when it would be due (July 13, 1988, for Board Staff and Intervenors, and July 20, 1988, for Hydro).

14.3 Parties

As Counsel to Board Staff:

Mr. D. Rogers, Q.C.
Mr. K. Yakabuski

For Ontario Hydro:

Mr. P. Genest, Q.C.
Mr. B. Campbell
Ms. J. Prior

The Board received twenty letters of intervention and three letters of concern. The following is a list of intervenors that actively participated in the proceedings through cross-examining witnesses:

The Association of Major Power Consumers in Ontario (AMPCO):

Mr. J. Davies
Mr. D. Horchik

The Consumers Association of Canada, Ontario Chapter (CAC):

Mr. M. Peterson
Mr. L. Ricchetti
Mr. R. Tenley

Appearing on his own behalf

Mr. A. Earl

Energy Probe:

Mr. D. Poch
Mr. P. Muldoon

Independent Power Producers' Society of Ontario (IPPSO):

Mr. N. Teekman

Municipal Electric Association (MEA):

Mr. A. Schwartz, Q.C.
Mr. A. Mark

The Hydro Electric Commission of the City of Nepean (Nepean):

Mr. H. MacDonald

Ontario Natural Gas Association (ONGA):

Ms. C. Kelk

The Society of Ontario Hydro Professional and Administrative Employees (the Society):

Mr. L. Clarke
Mr. A. Dean

The following parties intervened in the proceedings but did not actively participate in the cross-examination of witnesses:

Mr. B. Charlton, MPP, Hamilton Mountain (presented evidence)

Mr. R. Howe, on behalf of The Consumers' Gas Company Ltd.

Mr. D. Dukes, on behalf of Dow Chemical Canada Inc.

Mr. M. Humphries, on behalf of Falconbridge Limited

Mr. J. Mirka, on behalf of Hydro Mississauga

Mr. G. Laidlaw, on behalf of ICG Utilities (Ontario) Ltd

Mr. H. Arndt, on behalf of the Ontario Association of Physical Plant and Planning Administrators;

Mr. R. Longbottom, on behalf of Ottawa Hydro

Mr. T. Leishman, on behalf of INCO Ltd

Mr. A. Butler, on behalf of Union Gas Limited

Mr. R. Dodokin, Q.C., on behalf of the Waterpower Association of Canada (presented evidence)

14.4 The Witnesses

The following is a list of witnesses by sponsor and in order of appearance:

Ontario Hydro

Mr. M. Rothman
Chief Economist, Economics & Forecasts Division

Mr. P. Burke
Load Forecasts Department Manager, Economics & Forecasts Division,

Mr. B. Bellissimo
Section Head, Financial Forecasts, Financial Planning Department, Comptroller's Division - Planning & Reporting

Mr. A. Holt
Director of Fuels, Supply & Services Branch

Ms. D. Farr
Senior Fuel Planning Engineer - Nuclear, Financial & Business Planning, Fuels Division, Supply & Services Branch

Mr. D. Halpern
Section Head-Planning & Reporting, Financial Planning Department, Comptroller's Division - Planning & Reporting, Finance Branch

Mr. I. Daly
Technical Superintendent, Reliability & Quality Assurance Section, Central Nuclear Services, Technical & Training Services Division, Production Branch

Mr. W. Boyd
Resource Utilization Planning Manager (Acting), Power Systems Operations Division, Production Branch

Mr. K. Rawson
Supervising Engineer - Marketing, Interconnections Department, Power System Operations Division, Production Branch

Mr. J. Mulligan
Manager - Cash & Foreign Exchange, Treasury Division, Finance Branch

Mr. P. Newby
Acting Treasurer, Treasury Division

Mr. T. Popiel
Group Manager, Central Fund Thermal Services, Production Branch

Mr. W. Penn
Program Manager, Planning & Engineering Management

Mr. D. Chopra
Manager, Financial Planning Department, Comptroller's Division - Planning & Reporting, Finance Branch

Mr. R. Taborek
Senior Engineer, Supply/Demand Planning, System Planning Division, Power System Program Branch

Mr. I. Russell
Corporate Comptroller

Mr. D. Tyler
Director Human Resources Services Division

Mr. G. McIntyre
Director, Corporate Programming Division

Mr. E. Burdette
Senior Vice-President, Finance & Services

Mr. G. Colgrove
Section Head, Financial Projections Section, Financial Planning Department, Comptroller's Division, Finance Branch

Mr. T. Millar
Manager - Financial Accounting Policy & External Reporting Department, Comptroller's Division - Planning & Reporting

Mr. D. MacCarthy
Vice-President, Energy Management

Mr. H. Palmer
Director, Market Services & Development Division, Energy Management Branch

Mr. D. Commissiong
Director, Marketing Operations Division, Energy Management Branch

Mr. J. Mitchell
Manager, Production Development/Parallel Generation, Market Services and Development Division, Energy Management Branch

Mr. R. Bartholomew
Vice-President, Production Branch

Mr. J. Ryder
Group Manager, Nuclear Staffing, Technical and Training Services Division, Production Branch

Mr. B. Conway
Manager, Rates & Strategic Conservation Department, Market Services & Development Division, Marketing Branch

Mr. P. Vryostko
Manager, Industrial Marketing/Major Accounts, Marketing Operations Division, Energy Management Branch

Mr. W. Harper
Section Head, Rate Structures, Rates Department, Market Services & Development Division

Mr. D. Hui
Acting Section Head, Power Costing Selection, Financial Accounting Policy & External Reporting Department, Comptroller's Division - Planning & Reporting

Mr. R. Franklin
President and Chairman of the Board of Directors

Board Staff

Dr. L. de Bever
Chief Economist, Crown Life Insurance Company

Ms. S. Chown
Executive Vice President of Industrial Economics, Incorporated

Independent Power Producers' Society of Ontario

Mr. D. Argue
Senior Associate, Utility Specialist
Passmore Associates International

New Democratic Party

Mr. B. Charlton, MPP, Hamilton Mountain

The Consumers Association of Canada, Ontario Chapter

Dr. J. Wilson
President of J. W. Wilson & Associates, Inc.

Ontario Natural Gas Association

Mr. B. Jones
President of Blue Apple Consulting, Inc.

Waterpower Association of Ontario

Mr. W. Dodokin, Q.C
President of the Waterpower Association of Ontario

Mr. D. Carter
Principal in a generator company

Dr. W. Trick
Consulting Engineer and Officer
Electrogen Corporation

The Hydro Electric Commission of the City of Nepean

Mr. E. Lauer
Commissioner, Nepean Hydro

Mr. G. Dupont
Controller, Nepean Hydro

Mr. A. Emmet
Assistant General Manager and Chief Engineer
Nepean Hydro

14.5 Hearing Summary

The hearing began on May 16, 1988, and was completed on June 30, 1988, after 26 hearing days. There were over 5,000 pages of pre-filed evidence and the transcripts contained 4,140 pages. There were approximately 215 exhibits, 88 undertakings and 505 interrogatories filed over the course of the proceeding.

All exhibits and transcripts are available for public review at the Board's offices.

14.6 Costs

Under Section 28 of the Act, the Board is empowered to award costs. In the Report of the Board, E.B.O. 116, the Board established certain criteria for eligibility, the most important being that the party contributed to a better understanding of the issues before the Board. The Board, through its Rules of Practice and Procedure attached to Procedural Order 2, required that submissions on costs be made in final argument.

Many of these submissions on costs were quite lengthy. AMPCO requested that the Board order Hydro to pay its reasonably-incurred costs on the grounds that it participated in all aspects of the hearing in a responsible and productive fashion. The MEA requested the same treatment for similar reasons.

The CAC cited the participation of public interest groups, such as itself and Energy Probe, as valuable in achieving a better understanding by the public of Hydro's policies and procedures. It felt that its participation aided the legitimacy of the review of rate structure reform. It also raised many criticisms of the Board's cost awarding process. The CAC requested that it be awarded 100% of its costs; and that if anything less were to be considered, for example, because of its newness to these proceedings, its witness be considered separately and awarded 100%.

Energy Probe requested that 100% of its costs be paid by Hydro. Energy Probe expressed concern over the Board's award of 90% of its costs last year which, in its opinion, was motivated in part by an expressed desire on the part of the Board to curtail wasteful intervention. Energy Probe stated that it uses its resources efficiently and effectively and that, in any event, the costs it seeks to recover are only a portion of the costs it actually incurs.

IPPSO requested that 90% of its costs be recovered from Hydro. It questioned both the timeliness of receiving its HR 16 cost award while this year's hearing was in process, and the Board's judging an intervenor's reasonably-incurred costs. It stated that the nature and extent of its participation in HR 18 will depend on its cost award in HR 17.

The Society and ONGA did not make submissions on costs.

Hydro supported the continued application of the criteria for cost awards set out in E.B.O. 116. It reserved the right to scrutinize the detailed accounts submitted to the OEB Assessment Officer, and supported the determination of reasonably-incurred costs by the OEB Assessment Officer. While Hydro recognized the existence of draft legislation on intervenor funding which meets the concerns of some parties, it argued that there continues to be an onus on the recipients of cost awards under the current criteria to be responsible and helpful in understanding the issues before the Board. Further, future recipients of intervenor funding, under the proposed legislation, ought also to have these responsibilities.

Board Findings

In the Board's view, until the legislation to support intervenor funding is actually passed, it continues to be bound by the existing legislation and hence should be guided by the criteria set out in E.B.O. 116.

Using those criteria, the Board is satisfied that all parties contributed to its better understanding of the issues, some more so than others. Similarly, during parts of the hearing, some parties pursued a more narrow or particular interest than others and thus were not at all times of the same level of assistance to the Board in its inquiry. As well, the quality of cross-examination and argument of some parties was inferior to others.

Taking into account all the circumstances in this complex case, the Board finds as follows:

1. **Considering the particular interests of AMPCO and in view of the quality of its cross-examination and argument, AMPCO is entitled to recover 50% of its reasonably-incurred costs;**

2. Considering the particular interests of the MEA and in view of the quality of its cross-examination and argument, the MEA is entitled to recover 80% of its reasonably-incurred costs;

3. Considering the interests of Energy Probe and in view of the quality of its cross-examination and argument, Energy Probe is entitled to recover 95% of its reasonably-incurred costs;

4. Considering the particular interests of IPPSO and in view of the quality of its cross-examination and argument, IPPSO is entitled to recover 75% of its reasonably-incurred costs;

5. Considering the interests of the CAC and in view of the quality of its cross-examination and argument, the CAC is entitled to recover 95% of its reasonably-incurred costs;

6. Considering the particular interests of Nepean and in view of the quality of its evidence, cross-examination and argument, Nepean is entitled to recover 50% of its reasonably-incurred costs;

7. Considering the particular interests of the Waterpower Association and in view of the quality of its evidence and argument, the Waterpower Association is entitled to recover 75% of its reasonably-incurred costs;

8. Given the extent of its participation, the Society shall be paid an honorarium of $1,000 for its limited participation at the hearing; and

9. Given the extent of his participation, Mr. A. Earl shall be paid an honorarium of $500 for his limited participation at the hearing.

These intervenors, excepting the Society and Mr. Earl, shall submit to the Board within ten days of the issuance of this report, a statement of their reasonably-incurred costs. Following assessment, an Order shall be issued directing Hydro to pay such costs together with the costs of the Board.

Volume

2

Ontario
Energy
Board

Ontario

In the matter of a
Reference respecting

Ontario Hydro

H.R. 17

REPORT OF THE BOARD

Volume 2 – Appendices

VOLUME 2 - APPENDICES

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    City of Nepean
    Consumers Association of Canada
    Mr. Arnold Earl
    Energy Probe
    IPPSO
    MEA
    ONGA
    The Society
    Ontario Hydro

G. Glossary of Terms

Pages are numbered separately for each appendix.

Appendix A

Ontario Energy Board Act

Section 37

37. (1) In this section, "customer" means an industrial customer of Ontario Hydro having an average annual power demand of 5,000 kilowatts or more or a municipal corporation or municipal electric utility commission.

(2) Where Ontario Hydro proposes to change any of its rates or charges for any customer, it shall submit the proposal to the Minister not less than nine months before the date that the change is proposed to come into effect and the Minister shall refer the proposal to the Board.

(3) Where a proposal is referred to the Board by the Minister pursuant to subsection (2), the Board forthwith by public advertisement shall give at least twenty days notice of and shall hold a hearing in public with respect to the proposal and shall make a report or an interim report thereon to the Minister at least 90 days before the proposed effective date of such change and where the Board makes an interim report within such time it shall make a final report as soon as possible thereafter.

(4) The Minister at any time may refer to the Board, in addition to the proposal referred to in subsection (2),

(a) any existing or proposed rates or charges of Ontario Hydro to its customers or any class thereof;
(b) any matter in any way affecting or related to rates or charges by Ontario Hydro to its customers including, without limiting the generality of the foregoing, principles and practices respecting power costing, rate-making, financing, service reliability, system expansion and operations; or
(c) the principles used by or appropriate for use by Ontario Hydro in the exercise of any power to approve, determine or fix rates or other charges under section 90, 92 or 95 of the *Power Corporation Act*,

and the Board shall hold a hearing in public at which it shall investigate and examine into the matter referred to it and shall then report thereon to the Minister.

(5) The power of the Minister set out in clause (4)(a) does not apply to rates or charges in effect before the 1st day of January, 1975.

(6) A reference under subsection (4) may be general or particular in terms and may specify criteria or factors to guide the Board in making its investigation, examination and report.

(7) The Board may at any time give directions as to the nature and extent of interventions by persons interested in a matter that is to be the subject of a hearing held pursuant to this section, may set aside for future examination any issue that in its opinion requires a more prolonged examination and may make interim reports pending its final report with respect to the subject-matter of any reference.

(8) The Board may appoint from among a class of retail customers of Ontario Hydro having, in the opinion of the Board, a common interest, a person to represent that class at the hearing where it appears to the Board that the appointment should be made so that the class can be heard, but any other member of the class for which such appointment was made may be heard notwithstanding the appointment.

(9) The final report of the Board under this section shall contain a summary of the information presented and the views expressed at the hearing together with the opinion of the Board and its reasons therefor with respect to the matter or matters reported on and the signatures of the members of the Board making the report, and the Board shall deliver a copy of the report to Ontario Hydro forthwith after its making.

(10) Upon delivery of a report under this section, the Board shall make reasonable arrangements for inspection or purchase of copies by the public.

Appendix B

Transmittal Letters

Page

1. Letter from the Chairman, Ontario Hydro, to the Minister of Energy, dated April 18, 1988 B/1

2, Letter from the Minister of Energy to the Chairman, Ontario Energy Board, dated April 19, 1988 B/3

Ontario Hydro
700 University Avenu
Toronto, Ontari
M5G 1X

Robert C. Franklin, Chairman and President

DELIVERED BY HAND

April 18, 1988

The Honourable Robert C. Wong
Minister of Energy
12th Floor
56 Wellesley Street West
Toronto, Ontario
M7A 2B7

Dear Minister,

In accordance with Section 37 of the Ontario Energy Board Act, Ontario Hydro hereby submits to you its proposal for changes in electricity rates charged to its municipal utility and direct customers, effective January 1, 1989. Details of these proposed rates are provided in the attachment.

The proposed average "all customer" rate increase is 5.5 per cent. This increase is based upon a total revenue requirement for 1989 of $5942 million, which is an increase of $458 million over 1988. Of this, about $148 million is forecast to be recovered through higher primary sales, leaving $310 million to be recovered through the proposed 5.5 per cent rate increase.

The proposed changes in the rates to be charged to municipal utilities will result in an average increase of 5.3 per cent. The increase will vary among the 316 municipal utilities and two distributing companies according to their individual peak demands, energy consumption, and service conditions.

The proposed changes in the rates to be charged to direct industrial customers correspond to an average rate increase of 6.2 per cent. As is the case for municipal utilities, the increase will vary among the 108 large industrial customers. The 5.5 per cent all customers rate increase also includes a 5.7 per cent increase in the rural retail rates.

The chief factors contributing to the 1989 rate increase are the costs associated with the new facilities placed in service to meet increasing demands for power; escalation in costs associated with operations, maintenance, administration and fuel; the potential for significant expenditures in several areas, which are difficult to forecast with certainty at this time; and a desire for a smoothing of rate increases by augmenting net income to replenish reserves, thereby retaining the ability to moderate future rate increases.

The 1989 rate proposal includes changes to the method of customer cost allocation and to the rate structure. The changes are designed to improve cost tracking and, hence, the fairness of Hydro's rates. They will also encourage a more efficient use of the bulk power system and offer Hydro customers the opportunity to reduce their individual bills by managing their own electricity use. The implementation of these charges, which has been agreed to by representatives of Hydro's major customer groups, will bring to an end an era of uncertainty over Hydro's costing and pricing structure that has lasted over a decade.

The proposed increase of 5.5 per cent provides a level of net income of $684 million. It also provides for a smooth pattern of rate increases, flexibility to cope with uncertainties in the forecast, and recognition that rate increases have been constrained for several years, resulting in a net income below target.

Sincerely,

RC Franklin

Robert C. Franklin
Chairman and President

Enc

cc: Honourable David Peterson
Honourable Robert Nixon

er Ministre
Ministry
of
Energy

Ministère
de
l'Énergie

Energy [illegible]
Ontario

Queen s Park
Toronto, Ontario
M7A 2B7
416/965-4286
Telex 06217880

April 19, 1988

Mr. Robert W. Macaulay
Chairman
Ontario Energy Board
26th Floor
2300 Yonge Street
P. O. Box 2319
Toronto, Ontario
M4P 1E4

Dear Mr. Chairman:

Pursuant to Section 37 of the Ontario Energy Board Act, I hereby refer to the Ontario Energy Board for investigation, examination and report, the attached proposal of Ontario Hydro to change, effective the first day of January 1989, the rates or charges to its customers, as defined in the Act.

I am specifying the following criteria and factors for the guidance of the Board:

1. The Board shall examine and report on the manner in which Ontario Hydro has determined its revenue requirement and the extent to which Ontario Hydro has kept its proposed revenue requirement for 1989 as low as feasible.

2. In making its recommendations, the Board will have due regard for the maintenance of Ontario Hydro's financial soundness, its ability to attract capital at favourable rates, and the reliability and quality of its services to its customers. As the recommendations relating to net income policy contained in the previous report on 1988 rates are still under review by the Government, the use of a market-based rate of return as a means of planning net income should not be re-examined.

3. Ontario Hydro's Demand and Supply Planning Strategy should not be reviewed, as it will be examined in another venue.

4. Ontario Hydro has included a proposal for rate structure reform. The Board should review this proposal to ensure that it results in a fair and equitable allocation of costs among all customers.

Appendix "B" to Procedural Order - 1 in H.R. 17 dated April 19, 1988.

S.A.C. Thomas
Board Secretary

RULES OF PRACTICE AND PROCEDURE OF THE ONTARIO ENERGY BOARD H.R. 17

1. These Rules may be cited as the Ontario Energy Board Rules of Practice and Procedure - Ontario Hydro Reference - H.R. 17

INTERPRETATION

2. In these Rules,

"Act" means the Ontario Energy Board Act;

"affidavit" includes a written affirmation;

"Board" means the Ontario Energy Board;

"Hydro" means Ontario Hydro;

"interrogatory" means request in writing for information or particulars made to a party in a proceeding;

"intervenor" means a person, other than Hydro and Board Staff, who is interested in a rate proposal and intervenes to support, oppose, or request a modification of the rate proposal;

"party" means Hydro, Board Staff and any person given status by the Board to be a party in the proceeding;

"proceeding" means the proceeding before the Board inititated pursuant to ss.37(2) of the Act;

"rate proposal" means the proposal submitted to the Minister pursuant to ss.37(2) of the Act;

In conducting its review, I would expect the Board to recognize the confidentiality and commercially sensitive nature of matters that are the subject of negotiation or in litigation before the courts.

I would appreciate it if the Board structured its recommendations so that Ontario Hydro may act directly on the revenue requirement, and the resulting rates, in accordance with its responsibilities under the Power Corporation Act and so that I may consider separately such other recommendations as the Board may make.

I look forward to receiving the Board's report as early as possible, but not later than August 31, 1988.

Yours sincerely,

Robert C. Wong
Minister

Attachment

Appendix C

Procedural Orders

Page

1. Procedural Order - 1, dated April 19, 1988 C/1

2. Procedural Order - 2, dated May 19, 1988 C/29

Ontario
Energy
Board

Ontario

H.R. 17

IN THE MATTER OF the Ontario Energy Board Act, R.S.O. 1980, Chapter 332;

AND IN THE MATTER OF a reference to the Ontario Energy Board by the Minister of Energy in respect of the proposed bulk power rates or charges of Ontario Hydro for 1989.

BEFORE:
M.A.C. Daub)
Presiding Member)
) April 19, 1988
M. Jackson)
Member)

PROCEDURAL ORDER - 1

WHEREAS THE Minister of Energy (the "Minister") pursuant to section 37 of the Ontario Energy Board Act (the "Act"), has by letter dated April 19, 1988 attached hereto as Appendix "A", referred a proposal by Ontario Hydro to the Ontario Energy Board (the "Board") for a public hearing and report;

AND WHEREAS Ontario Hydro proposes to change its rates or charges to its customers, as defined in section 37 of the Act, such changes to take effect January 1, 1989;

AND WHEREAS it is expedient to make provision for the hearing;

IT IS ORDERED THAT:

1. The hearing will commence at 9:00 a.m. on Monday May 16, 1988 in the Board's Hearing Room #1, 25th Floor, 2300 Yonge Street, Toronto. The first day of the hearing will be for the purposes of defining the specific issues to be dealt with at the hearing and dealing with procedural matters. The Board has appointed Tuesday, May 24, 1988, commencing at 9:00 a.m., at the same location, for the hearing of motions concerning interrogatories. The hearing will then be adjourned to 9:00 a.m. on Monday, May 30, 1988, at the same location, to commence hearing evidence and shall continue until the hearing's completion.

2. Ontario Hydro shall file with the Board Secretary fifteen copies of the evidence to be adduced in support of its proposal on or before Tuesday, April 19, 1988, and shall make one copy of the evidence filed available for convenient public inspection at its head office in Toronto, and at each of its regional offices in Barrie, Belleville, London, North Bay, North York and Thunder Bay.

3. A copy of the evidence filed shall be provided by Ontario Hydro without charge to any person who has filed

notice of intention to participate in accordance with paragraph 4 of this Order. Ontario Hydro shall also provide, upon payment to cover the cost of reproduction, one copy of the evidence filed to any other person upon request.

4. Any person who intends to intervene in the hearing, i.e. actively participate, ("intervenor") shall file with the Board Secretary and deliver to the Secretary of Ontario Hydro, on or before Friday, May 13, 1988, a written intervention ("intervention""), containing a clear and detailed statement indicating the interest of the intervenor in the proceeding, the grounds for intervention, a concise statement of the nature and scope of the intervenor's intended participation, the name of any counsel or other person representing the intervenor, and the address, telephone number and name of the intervenor, counsel or other representative to whom communications may be sent. Filing shall be effected only if the intervention is in the hands of the Board Secretary by 4:00 p.m. Friday, May 13, 1988. Failure to comply fully with this paragraph may result in the intervention being rejected.

5. On Monday, May 16, 1988, the Board Secretary shall distribute a list of intervenors to all intervenors and to Ontario Hydro.

6. Board Staff and intervenors who wish to present evidence to the Board shall prepare such evidence in writing,

and shall file fifteen copies of the evidence with the Board Secretary, on or before Wednesday, May 18, 1988, along with the names of all intended witnesses and, in the case of expert witnesses, their qualifications. One copy of such evidence shall be delivered to the Secretary of Ontario Hydro and one copy to each intervenor. Evidence presented by any party after Wednesday, May 18, 1988 will be received only with the leave of the Board.

7. In order to expedite the hearing, Board Staff and those intervenors who wish information and material from Ontario Hydro or another party that is in addition to the evidence filed, and that is relevant to the scope of the specific issues defined by the Board, shall request the same by written interrogatories rather than by means of questions asked at the hearing. Interrogatories directed to Ontario Hydro dealing with Economics and Load Forecasting shall be filed with the Board Secretary and delivered to the Secretary of Ontario Hydro on or before Wednesday, May 18, 1988. All other interrogatories directed to Ontario Hydro shall be filed with the Board Secretary and delivered to the Secretary of Ontario Hydro on or before Wednesday, May 18, 1988.

8. Ontario Hydro, Board Staff and all intervenors shall respond to all interrogatories directed to them in writing, as soon after their filing as possible and in any event no

later than 5 full working days before presentation of evidence at the hearing relating to the interrogatory, unless otherwise ordered by the Board. Fifteen copies of each response shall be filed with the Board Secretary, one copy delivered to the Secretary of Ontario Hydro and one to each intervenor. Interrogatories dealing with Economics and Load Forecasting shall be responded to on or before 12:00 noon, Wednesday, May 25, 1988 and are not subject to the requirement of providing a response 5 full working days before presentation of evidence at the hearing.

9. Where a party to whom an interrogatory has been directed declines to provide any or all of the information or material requested, a response indicating this fact shall be provided in writing as soon after the filing of the interrogatory as possible and in any event no later than 9:00 a.m., Tuesday, May 24, 1988. The Board will hear motions to compel the provision of the information and material requested in such interrogatories at 9:00 a.m. on Tuesday, May 24, 1988 in the Board's hearing room.

10. Evidence in support of Ontario Hydro's proposal shall be considered at the hearing in phases and in an order and manner to be determined by the Board. Such evidence shall be followed, in each phase of the hearing, by evidence on behalf of Board Staff and of intervenors, in an order and manner to be determined by the Board.

11. The order, manner and form of argument is to be determined by the Board.

12. The attached Rules of Practice and Procedure of the Ontario Energy Board - H.R 17 (the "Rules"), attached hereto as Appendix "B", are the rules adopted by the Board respecting the practice and procedure in this hearing.

13. Ontario Hydro shall, at its expense, forthwith cause the Notice of Public Hearing, attached hereto as Appendix "C", to be published as a display advertisement in each daily newspaper published in the Province.

14. Ontario Hydro shall, at its expense, forthwith serve on each of its customers, as defined in subsection 37(1) of the Act and on each intervenor of record in H.R. 16, a copy of its proposal, this Procedural Order - 1 (to which is attached the Minister's letter, the Rules and the Notice of Public Hearing as Appendices "A", "B" and "C" respectively), and shall in so doing draw particular attention to the Notice of Public Hearing.

ISSUED at Toronto this 19th day of April, 1988.

ONTARIO ENERGY BOARD

S.A.C. Thomas
Board Secretary

ister Ministre

Ministry
of
Energy

Ministère
de
l'Énergie

Queen's Park
Toronto Ontario
M7A 2B7
416 965-4286
Telex 06217880

April 19, 1988

Appendix "A" to Procedural
Order - 1 in H.R. 17 dated
April 19, 1988.

S.A.C. Thomas
Board Secretary

Mr. Robert W. Macaulay
Chairman
Ontario Energy Board
26th Floor
2300 Yonge Street
P. O. Box 2319
Toronto, Ontario
M4P 1E4

Dear Mr. Chairman:

Pursuant to Section 37 of the Ontario Energy Board Act, I hereby refer to the Ontario Energy Board for investigation, examination and report, the attached proposal of Ontario Hydro to change, effective the first day of January 1989, the rates or charges to its customers, as defined in the Act.

I am specifying the following criteria and factors for the guidance of the Board:

1. The Board shall examine and report on the manner in which Ontario Hydro has determined its revenue requirement and the extent to which Ontario Hydro has kept its proposed revenue requirement for 1989 as low as feasible.

2. In making its recommendations, the Board will have due regard for the maintenance of Ontario Hydro's financial soundness, its ability to attract capital at favourable rates, and the reliability and quality of its services to its customers. As the recommendations relating to net income policy contained in the previous report on 1988 rates are still under review by the Government, the use of a market-based rate of return as a means of planning net income should not be re-examined.

3. Ontario Hydro's Demand and Supply Planning Strategy should not be reviewed, as it will be examined in another venue.

4. Ontario Hydro has included a proposal for rate structure reform. The Board should review this proposal to ensure that it results in a fair and equitable allocation of costs among all customers.

In conducting its review, I would expect the Board to recognize the confidentiality and commercially sensitive nature of matters that are the subject of negotiation or in litigation before the courts.

I would appreciate it if the Board structured its recommendations so that Ontario Hydro may act directly on the revenue requirement, and the resulting rates, in accordance with its responsibilities under the Power Corporation Act and so that I may consider separately such other recommendations as the Board may make.

I look forward to receiving the Board's report as early as possible, but not later than August 31, 1988.

Yours sincerely,

Robert C. Wong
Minister

Attachment

Ontario Hydro
700 University Avenue
Toronto, Ontario
M5G 1X6

Robert C. Franklin, Chairman and President

DELIVERED BY HAND

April 18, 1988

The Honourable Robert C. Wong
Minister of Energy
12th Floor
56 Wellesley Street West
Toronto, Ontario
M7A 2B7

Dear Minister,

In accordance with Section 37 of the Ontario Energy Board Act, Ontario Hydro hereby submits to you its proposal for changes in electricity rates charged to its municipal utility and direct customers, effective January 1, 1989. Details of these proposed rates are provided in the attachment.

The proposed average "all customer" rate increase is 5.5 per cent. This increase is based upon a total revenue requirement for 1989 of $5942 million, which is an increase of $458 million over 1988. Of this, about $148 million is forecast to be recovered through higher primary sales, leaving $310 million to be recovered through the proposed 5.5 per cent rate increase.

The proposed changes in the rates to be charged to municipal utilities will result in an average increase of 5.3 per cent. The increase will vary among the 316 municipal utilities and two distributing companies according to their individual peak demands, energy consumption, and service conditions.

The proposed changes in the rates to be charged to direct industrial customers correspond to an average rate increase of 6.2 per cent. As is the case for municipal utilities, the increase will vary among the 108 large industrial customers. The 5.5 per cent all customers rate increase also includes a 5.7 per cent increase in the rural retail rates.

The chief factors contributing to the 1989 rate increase are the costs associated with the new facilities placed in service to meet increasing demands for power; escalation in costs associated with operations, maintenance, administration and fuel; the potential for significant expenditures in several areas, which are difficult to forecast with certainty at this time; and a desire for a smoothing of rate increases by augmenting net income to replenish reserves, thereby retaining the ability to moderate future rate increases.

The 1989 rate proposal includes changes to the method of customer cost allocation and to the rate structure. The changes are designed to improve cost tracking and, hence, the fairness of Hydro's rates. They will also encourage a more efficient use of the bulk power system and offer Hydro customers the opportunity to reduce their individual bills by managing their own electricity use. The implementation of these charges, which has been agreed to by representatives of Hydro's major customer groups, will bring to an end an era of uncertainty over Hydro's costing and pricing structure that has lasted over a decade.

The proposed increase of 5.5 per cent provides a level of net income of $684 million. It also provides for a smooth pattern of rate increases, flexibility to cope with uncertainties in the forecast, and recognition that rate increases have been constrained for several years, resulting in a net income below target.

Sincerely,

RC Franklin

Robert C. Franklin
Chairman and President

Enc

cc: Honourable David Peterson
Honourable Robert Nixon

Application of Rules

3. These Rules apply to a proceeding by virtue of an order the Board in that proceeding which adopts them.

PART 1 - GENERAL

Orders on Procedure

4. (1) During the proceeding, the Board may issue additional orders on procedure which shall govern the conduct of the proceeding and prevail over any provision of these Rules that is inconsistent with those orders.

(2) The Board may, at any time during a proceeding, amend any orders on procedure.

5. During the proceeding, where the Board is satisfied that the special circumstances of the proceeding so require, the Board may by order dispense with, vary or supplement any of the provisions of these Rules.

Extending or Abridging Time

6. The Board may, upon application or on its own motion and upon such terms as it considers proper, extend or abridge the time prescribed by these Rules or otherwise directed by the Board and may exercise this power although the application therefor is not made until after the expiry of the time prescribed.

Service

7. (1) Subject to subrule (3), service of any notice or other document, including a document originated by the Board, may be personal or by registered mail or otherwise as the Board may direct.

(2) Service of any notice or other document may be on a party to the proceeding or on the authorized representative of the party where named.

(3) When the public hearing is in progress, service of any document may be effected:

(a) by making copies of the document available to the parties present at the public hearing;

(b) serving a copy on any other party who is not present and requests a copy; and,

(c) as directed by the Board

(4) The Board may direct service of any notice or other document by public advertisement and any such service shall be deemed to be effected on the last day of publication.

(5) Proof by affidavit of service and the means used to effect service shall, on the direction of the Board, be filed in respect of any notice or other document required to be served.

Filing

8. (1) Filing of any notice or other document may be personal or by registered mail or otherwise as the Board may direct.

(2) Service or filing by registered mail is deemed to be effected on the fifth day after the date of mailing.

(3) Where any document is required to be filed, the date of filing shall be the date of actual receipt by the Board Secretary or anyone authorized by the Board to receive such documents.

Affidavits

9. (1) Affidavits in a proceeding shall be filed as directed by the Board.

(2) Where an affidavit is made as to belief, the grounds on which the belief is based shall be set out in the affidavit.

C/13

Verification

10. The Board may, at any time, require the whole or any part of any document filed to be verified by affidavit by issuing an order to that effect to the person from whom such verification is required.

Failure to Comply

11. (1) Where a party to a proceeding has not complied with any requirements of these Rules or any other orders on procedure issued by the Board, the Board may,

    (a) stay the proceeding until satisfied that such requirements or orders have been complied with;

    (b) set aside the notice of motion, intervention, or an interrogatory or response thereto, or strike out any part thereof; or

    (c) take such other steps as it considers just and reasonable.

    (2) No proceeding is invalid by reason only of a defect or other irregularity in form.

Formulation of Issues

12. In a proceeding the Board may designate the first day of the proceeding and such other days as are necessary as being for the purpose of:

    (a) formulating or simplifying issues;

    (b) amending an intervention for the purposes of clarification, amplification or limitation;

    (c) admitting certain facts or proof of them by affidavit, or the use by any party of documents of a public nature;

    (d) settling of matters connected with interrogatories;

(e) deciding the procedure to be adopted in the proceeding;

(f) exchanging documents among the parties;

(g) deciding any other matters that may aid the simplification of the proceeding.

Questions of Law

13. If it appears to the Board at any time that there is a question or issue of law or jurisdiction or practice or procedure that should be decided before a proceeding continues, the Board may direct the question or issue to be raised for determination by the Board and the Board may, pending the determination of such question or issue, order the whole or any part of the proceeding to be stayed.

Production of Documents

14. (1) Where in the rate proposal or in any notice of motion, intervention, or response to any interrogatory, a party refers to a document upon which the party intends to rely in the proceeding any other party may, before the hearing of the proceeding, serve notice in writing, which shall be filed, upon the party from whom the document is requested, to produce that document for inspect on and copying.

(2) Any party who fails to comply with the notice given pursuant to subrule (1) within 10 days of the receipt thereof shall not thereafter put the requested document in evidence in the proceeding unless the Board is satisfied that there is sufficient excuse for the failure to file the document or the public interest otherwise requires.

Additional Information

15. At any time in a proceeding, the Board may order any party to provide such further

information, particulars or documents, or other evidence, as the Board deems necessary to enable the Board to obtain a full and satisfactory understanding of the subject of the proceeding.

Interrogatories

16. Interrogatories may be directed by a party to another party, and shall be:

    (a) numbered consecutively in accordance with the system directed by the Board; and

    (b) filed and served as directed by the Board.

Responses to Interrogatories

17. (1) Subject to subrule (2), where interrogatories are directed to a party and have been served on that party, the party shall:

    (a) provide a full and adequate response to each interrogatory on separate pages; and

    (b) file and serve a copy of the responses as directed by the Board.

(2) A party who is unable or unwilling to provide a full and adequate response to an interrogatory shall:

    (a) where the party objects to providing any information requested, provide that information to which no objection is given and a response setting out the objection and the grounds therefor; or

    (b) where the party contends that the information necessary to provide a response is not available, provide a response setting out the reasons for the unavailability of such information and, where possible, provide alternative available information that the party considers would assist the party directing the interrogatory; and

(c) file and serve on all parties to the proceeding a copy of the response as directed by the Board.

Summons

18. (1) A party who requires the attendance of a person in Ontario as a witness at a hearing may obtain a summons on request from the Board and the summons may also require the person to produce at the hearing, documents and items specified in the summons.

(2) A summons shall be served personally on the person to whom it is directed at least 48 hours before the time fixed for the attendance of the person unless otherwise directed by the Board and, at the same time, attendance money calculated in accordance with the appropriate tariff in the Rules of Civil Procedure shall be paid or tendered.

(3) A summons shall be in Form I and signed by an authorized representative of the Board and may be issued in blank and completed by the party or authorized representative of the party on whose behalf it is issued and may contain the names of any number of persons required to appear before the Board.

Evidence in Other Proceedings

19. Subject to section 63 of the Act, information or evidence received in any other proceeding before the Board or any other tribunal or any report, decision, finding or order made in respect thereof may, by leave of the Board, be received in the proceeding.

Form of Documents

20. (1) Every document in a proceeding shall be on either letter or metric size paper,

punched with four 3/8 inch holes, and the text shall be printed, typewritten, written or reproduced legibly on both sides where practicable with double spaces between the lines.

(2) Every document filed in connection with the proceeding shall be marked with the Board file number and the exhibit number assigned by the Board Clerk.

Amendments

21. (1) In a proceeding, the Board may, on condition or otherwise:

(a) allow an amendment to any document;

(b) order to be amended or struck out any document or any part thereof that may tend to prejudice, embarrass or delay a fair hearing of the rate proposal; or

(c) order any other amendments that may be necessary for the purpose of hearing and determining the issues in the proceeding.

(2) Where a document or part thereof, made or submitted by any party in connection with a rate proceeding is revised or amended:

(a) each revised or amended page shall clearly indicate,

(i) the date of revision or amendment, and

(ii) the portion of the page revised or amended by clearly making the change through the use of a vertical line in the right hand margin, or through the use of an asterisk or other marking beside the change, or through such other system which will clearly indicate the changes from the previous version;

(b) each revision or amendment shall be accompanied with a statement explaining the nature of the revision or amendment; and,

(c) each revision of the document shall be filed on a different colour of paper to reflect which version of the document the revision affects, in accordance with the following order of colours:

first revision - green,
second revision - yellow,
third revision - blue.

Notice of Motion

22. (1) Any matter which arises in the course of a proceeding and which requires a decision or order of the Board shall be brought before the Board by notice of motion.

(2) A notice of motion shall be in writing and may be in any form provided that it contains a clear and concise statement of the facts, the order or the decision sought and the grounds therefor.

(3) A notice of motion shall be filed and served on all parties at least two days before the motion is heard.

(4) Any party who wishes to answer the motion may file and serve on all parties a written answer at any time before the motion is heard.

(5) Any document which a party may wish to submit in support of a notice of motion or answer shall accompany the pleading in question and shall be filed and served on all parties.

(6) Notwithstanding subrules (2) to (5), a notice of motion given during the course of a public hearing may be given orally at the public hearing and shall be disposed of in accordance with such procedures as the Board may direct.

Commencement of a Proceeding

23. (1) A proceeding shall be commenced by notice issued by the Board or otherwise as the Board may direct.

(2) The Board shall give directions as to the form and service of the notice of public hearing.

(3) Where the Board requires the preparation of information and material as evidence incidental to a proceeding, such information and material shall be filed and served as directed by the Board.

Information Requirements

24. (1) Every rate proposal shall be accompanied by any evidence which is or which may be useful in explaining or supporting the rate proposal.

(2) Where Hydro is unable to submit the evidence necessary to support its rate proposal, or other evidence which the Board has requested through a previous report of the Board, at the time the reference is made, Hydro shall:

(a) submit such evidence as is available at that time;

(b) identify the balance of the evidence to be submitted; and

(c) state when the balance of the required evidence will be submitted.

(3) Where Hydro is unwilling to submit any evidence required of it by the Board or a previous report of the Board, Hydro:

(a) may withhold the evidence to which objection is taken;

(b) shall submit any evidence required to which no objection is taken; and

(c) shall submit a statement setting out the objection and the grounds therefor.

(4) where the Board does not sustain an objection taken pursuant to subrule (3), the Board shall so inform Hydro and Hydro shall submit the evidence within the time set out by the Board.

Letters of Comment

25. (1) Where notice has been given of a proceeding, any interested person who does not wish to intervene in respect of the proceeding but who wishes to communicate views regarding the rate proposal to the Board may file a letter commenting on the rate proposal which describes the nature of the person's interest in the rate proposal and states clearly the person's views regarding the rate proposal together with any relevant information that may be useful in explaining or supporting those views.

(2) A person who files a letter pursuant to subrule (1) does not thereby acquire status as a party.

(3) The Board shall provide Hydro with a copy of any letter filed pursuant to subrule (1).

(4) Hydro may file a reply to the letter and serve it on the person who filed the letter and such other person as the Board may direct.

(5) The letters of comment and the replies filed will be on the public record.

Intervention

26. (1) A person may intervene in a proceeding and shall file and serve upon Hydro a written intervention signed by the intervenor or authorized representative of the intervenor.

(2) Every intervention:

(a) shall state clearly the intervenor's intention to appear at the hearing and the degree of participation which the intervenor anticipates it will have;

(b) shall contain a clear and concise statement indicating support or opposition to the rate proposal, any requested modification of it, and reasons therefor;

(c) may be accompanied by any documents that may be useful in explaining or supporting the intervention;

(d) shall be divided into paragraphs, numbered consecutively;

(e) shall be endorsed with the full name, address and telephone number of the intervenor and the authorized representative of the intervenor upon whom documents may be served; and

(f) shall be served on such other persons as the Board may direct.

(3) An intervention shall not be filed without leave of the Board after the date for interventions specified in the order of the Board making provision for the public hearing of the rate proposal.

27. Unless the Board otherwise directs, Hydro shall serve each intervenor with a copy of the rate proposal, the supporting evidence upon which Hydro relies, and any orders on procedure issued by the Board.

Public Record

28. All documents shall be filed on the public record unless the Board orders otherwise.

Witnesses and Evidence

29. (1) Subject to subrules (5) and (6), "written evidence" means material,

(a) in written form with consecutively numbered pages and, where possible, numbered paragraphs; or

(b) in written question and answer form with lines numbered;

intended to be presented by a party as evidence at a public hearing.

(2) Subject to subrule (3), witnesses at a public hearing shall be examined viva voce under oath or affirmation unless otherwise directed by the Board.

(3) The Board may, at any time, order that:

(a) any particular facts be proved by affidavits;

(b) the affidavit of any witness be read at a public hearing on such conditions as the Board considers reasonable; and

(c) any witness be examined before a Commissioner or other person authorized to administer oaths appointed by the Board for that purpose.

(4) Subject to subrules (5) and (6), any party who wishes to present evidence at a public hearing shall, prior to the appearance of any witness and as directed by the Board, file and serve its written evidence.

(5) The written evidence of Hydro shall be deemed to include the rate proposal, the evidence submitted by Hydro to the Board to support its rate proposal, any evidence provided by Hydro in any response by Hydro to an interrogatory, and any written evidence filed and served pursuant to subrule (4), and Hydro shall not, except by leave of the Board, submit additional written evidence.

(6) The written evidence of an intervenor shall be deemed to include any information provided in its intervention and in any response by the intervenor to an interrogatory, and written evidence filed and served pursuant to subrule (4).

(7) The Board may permit the introduction of written evidence at a public hearing as the evidence in chief of a witness who confirms under oath or affirmation that the written evidence was prepared by the witness or under the direction or control of the witness and is accurate to the best of the knowledge, information and belief of the witness.

(8) Written evidence supplementing the written evidence referred to in subrule (4) or the additional written evidence referred to in subrule (5) may be filed after the date prescribed only with the leave of the Board and shall be served as directed by the Board.

Sittings

30. Where a public hearing has commenced, the hearing shall proceed, as far as may be practicable in the opinion of the Board, from day to day, but may be adjourned by the Board from time to time.

Argument

31. All arguments shall be written and in accordance with the order, manner and form prescribed by the Board, unless otherwise ordered by the Board.

Costs

32. In the proceeding, in addition to the costs of the Board, the Board may,

a) award costs to any intervenor who

i) has or represents a substantial interest in the outcome of the proceeding of such a nature that the intervenor will receive a benefit or suffer a detriment as a result of the order or decision resulting from the proceeidng;

ii) has participated in the proceeding in a responsible way; and

iii) has contributed to a better understanding of the issues by the Board;

b) award costs against an intervenor where the intervention is, in the opinion of the Board, frivolous or vexatious.

33. (1) A party applying for costs shall address its eligibility for costs and the proportion to be awarded, setting forthe the reasons why costs should be awarded having regard to the circumstances of the proceeding and the factors set forth in rule 39, in final argument.

(2) A party objecting to a cost award shall set forth its objections in final argument or reply.

34. The Board shall determine the eligibility for an award of costs and shall indicate,

a) whether a party is entitled to costs, or whether, having regard to the circumstances of the case and the factors set out in rule 39, no costs or only a proportion of costs should be awarded,

b) by whom the costs shall be paid, and

c) any other matters the Board considers appropriate.

35. (1) Within ten (10) working days of the release of the Board's Decision or Report, the party awarded costs shal file a Statement of Costs, verified by Affidavit. and all supporting documentation and shall serve a copy thereof on the party against whom costs were awarded.

(2) The party against whom costs were awarded shall file any objections to the Statement of Costs within ten (10) working days of the receipt

of the Statement of Costs and shall serve a copy thereof on the party awarded costs.

36. (1) The Board's solicitor, or such other officer as may be appointed by the Board, shall be the Assessment Officer.

(2) The Assessment Officer:

(a) shall consider the Statement of Costs and any objections filed;

(b) may require further supporting documentation and/or reply from the party awarded costs;

(c) may invite oral representation from the parties;

(d) shall ensure that the costs claimed are,

i) reasonable in the circumstances,

ii) incurred directly and necessarily for the purposes of the proceeding, and

iii) in accordance with actual expenditures;

(e) shall made a recommendation to the Board as to the quantum of costs;

(f) shall prepare written reasons where an objection has been filed and may do so where no objection has been filed; and

(g) shall provide copies of the recommendation, and written reasons, if any, to the parties.

(3) A party affected may object to the recommendation of the Assessment Officer by filing an objection and serving a copy thereof on the other affected party within ten (10) working days of the date of the recommendation.

37. (1) After the time prescribed in subrule 36(3) has passed, the Board:

(a) shall consider the recommendation and reasons, if any, of the Assessment Officer;

(b) shall consider any objections to the recommendation of the Assessment Officer;

(c) may, on its own motion or upon the request of a party, hold a hearing as to the quantum of costs to be allowed; and

(d) shall fix the quantum of costs to be awarded.

(2) The Board shall issue a cost order fixing the amount of costs.

FORM I

ONTARIO ENERGY BOARD ACT

SUMMONS TO A WITNESS BEFORE the Ontario Energy Board

RE:

TO:

You are hereby summoned and required to attend before the Ontario Energy Board at a hearing to be held at ____________________
in the ____
of _________________ on ___________________
day, the __________________________ day
of ___________19__, at the hour of
__________ o'clock in the _______ noon , and so from day to day until the hearing is concluded or the tribunal otherwise orders, to give evidence on oath touching the matters in question in the proceedings and to bring with you and produce at such time and place ______________________________
____
____
____

Dated this ______ day of _____________ , 19__.

ONTARIO ENERGY BOARD

____

NOTE:

You are entitled to be paid the same personal allowances for your attendance at the hearing as are paid for the attendance of a witness summoned to attend before the Supreme Court.

If you fail to attend and give evidence at the hearing, or to produce the documents or things specified, at the time and place specified, without lawful excuse, you are liable to punishment by the Supreme Court in the same manner as if for contempt of that court for disobedience to a subpoena.

Ontario Energy Board
Commission de l'Énergie de l'Ontario

H.R. 17

IN THE MATTER OF the Ontario Energy Board Act, R.S.O. 1980, Chapter 332;

AND IN THE MATTER OF a reference to the Ontario Energy Board by the Minister of Energy in respect of the proposed bulk power rates or charges of Ontario Hydro for 1989.

BEFORE: M.A. Daub)
Presiding Member)
) May 16, 1988
M. Jackson)
Member)

PROCEDURAL ORDER - 2

UPON the receipt of the April 9, 1988, letter from the Minister of Energy (the "Minister"), pursuant to section 37 of the Ontario Energy Board Act, requesting the Ontario Energy Board (the "Board") to investigate, examine and report on the Ontario Hydro ("Hydro") proposal for rates or charges to its customers, scheduled to be effective January 1, 1989, the Board made provision for a hearing in a procedural order dated April 9, 1988 ("Procedural Order-1");

AND UPON Procedural Order-1 setting Monday, May 16, 1988 for the purpose of defining the specific issues to be dealt with at the hearing and to deal with procedural matters;

AND WHEREAS the Board has the authority to set procedures for its hearings;

AND UPON subsection 37(3) which prescribes a deadline for the completion of the Board's Report to the Minister;

AND WHEREAS the Board has the authority, pursuant to subsection 37(7) of the Act, to set aside for future examination any issue that in its opinion requires a more prolonged examination;

AND WHEREAS the authority of the Board to review and report on a matter in its entirety is not limited by the fact that the matter has an impact over several years, provided that the matter bears on the evaluation of the rate proposal under review;

AND UPON paragraph 4 of the Minister's letter of transmittal, which requires the Board to review Hydro's rate structure reform proposal to ensure that it results in a fair and equitable allocation of costs among all customers;

AND WHEREAS the Board deems it expedient to set out a list of hearing issues and a list of interrogatory issues which will form the basis of the hearing which is to commence on May 30, 1988;

AND WHEREAS hearing issues are defined as issues to be dealt with during the hearing, and interrogatory issues are defined as issues to be dealt with through the interrogatory process and in argument but not through cross-examination;

AND WHEREAS an interrogatory issue may become a hearing issue, and vice versa, only with the leave of the Board;

AND WHEREAS the Board wishes to define the order of examination by the parties in an attempt to expedite the hearing and develop the best record from the hearing;

IT IS ORDERED THAT:

1. (a) The following are issues to be dealt with at the hearing:

Economics

What is Hydro's forecast of key economic variables underlying the proposed revenue requirement for 1989?

How is Hydro's proposed revenue requirement for 1989 affected by changes in key economic variables and indicators?

What is the basis for any discrepancies between Hydro's forecast of key economic variables and the forecast offered on behalf of Board staff?

What impacts, both financial and other, if any, has Hydro assumed the recently signed Free Trade Agreement will have on Hydro if implemented on January 1, 1989, as planned?

Electricity Sales

What are the major assumptions underlying the short-term load forecast, which in turn underlies Hydro's proposed revenue requirement for 1989? How do changes in these assumptions affect the load forecast and the proposed revenue requirement for 1989?

What changes to Hydro's short-term load forecasting process, if any, have been introduced since the completion of the H.R.16 proceedings, or are planned to be introduced prior to 1990? What impact, if any, do these changes have on the load forecasts or on Hydro's proposed revenue requirement for 1989?

What impact will the new rate structure, including time of use rates, have on the short-term load forecast?

Is the forecast of fiscal 1989 secondary sales revenue and costs reasonable? Does Hydro have an updated estimate of social cost of acid gas emissions to support its estimates of the benefits of secondary sales to Ontario?

Fuel, Power Purchases and Secondary Sales

Are Hydro's forecasts of water levels and hydraulic production appropriate for 1989?

Will Hydro's fossil fuel generating stations be appropriately utilized in 1989?

What were the economic advantages of reopening Lennox in 1987 and what are they forecast to be for 1988, 1989 and subsequent years?

Does Hydro plan to purchase power in 1989? How has the proposed level of power purchases been determined? What are the impacts of purchasing more or less power? What new contracts have been negotiated?

How is Hydro dealing/proposing to deal with the cogeneration and parallel generation recommendations made by the Board in the H.R. 16 Report?

What are Hydro's proposed buy-back rates for co-generation and parallel generation for fiscal 1989? How are they derived?

In light of recent pressure tube problems at Pickering No. 3, should Hydro adjust its expectations of nuclear plant reliability and its forecast of nuclear unit energy costs?

How will the pricing and level of secondary sales be affected by the free trade proposal?

How will the level of acid gas emissions in 1989 and beyond be affected by the retubing of Pickering Units 3 and 4?

Fuel Contracts

What was the basis for the recent write-off of the U.S. Steel Cumberland Mine advance?

Have there been any changes since H.R. 16 in Hydro's coal and uranium requirements or supply contracts? Will Hydro be pursuing further negotiations with respect to these contracts?

What are the expected future economic benefits of the advances under Hydro's uranium contracts or any other fuel contracts?

What is the basis for the $150 million settlement with Petrosar?

OM&A General

What steps is Hydro taking to manage its costs in general and specifically for 1989?

How does Hydro's business planning process affect financial forecasting, budgeting and management control processes? What changes, if any, have been made since 1987 or are planned prior to 1990 and what impact, if any, will these changes have on Hydro's proposed revenue requirement for 1989?

How are Hydro's business plans reviewed? What use is made of resource variations identified by branches in their business plans? Is appropriate consideration given to resource variation data in the business planning process?

Are Hydro's regular and non-regular staff levels reasonable?

C/35

How do Hydro's salary and wage scales compare to those in other industries and other major Canadian utilities? How is Hydro planning to maintain or achieve competitive compensation levels with comparable employers and what success has been achieved to date? What results, if any, are expected in 1989? What constraints, if any, is Hydro facing?

What is the relationship or tradeoff between OM&A costs and fuel and fuel-related costs? How does Hydro identify and evaluate these tradeoffs?

What new productivity targets does Hydro have or is planning to adopt for 1989? How are they derived and how are they used? Will Hydro's studies on effectiveness and efficiencies be used to identify or define productivity targets for 1989? What are the terms of reference of the studies?

Are Hydro's expenditures on preventative maintenance in transmission and distribution appropriate?

Capital Program and Depreciation

Are Hydro's estimates of fuel channel removal, irradiated fuel disposal and decommissioning costs appropriate for the determination of the 1989 revenue requirement?

Have any changes to the service life estimates or the retubing provisions been made by Hydro in light of recent reviews of the status of the pressure tubes in Pickering A, Units 3 and 4? What assumptions are these changes, if any, based on? Have any other provisions or contingent liabilities been established in this regard? What impact is this forecast to have on the 1989 revenue requirement?

What are Hydro's demothballing plans for 1989 and beyond? What analyses underlies these plans? What policies govern these analyses on an on-going basis?

What constraints affect Hydro's plans to reduce acid emissions? What degree of flexibility is necessary? What acid emission reduction technologies has Hydro evaluated and why? Of those technologies evaluated, how were the economic evaluations conducted? What were the results of these assessments? How are the choices resulting from these decisions monitored on an ongoing basis?

Borrowing Program

Is Hydro's borrowing program for 1989 appropriate?

How is Hydro's borrowing program developed and reviewed internally? What changes have occured since 1987, or are proposed prior to 1990, to this process? Has the involvement of the Provincial Government in the area changed since 1987?

How does the Ministry of Treasury and Economics monitor Hydro's financing plans, review its borrowing program and other activities and ensure that Hydro complies with Provincial policies?

Financial Policy

Is the proposed accounting treatment for the Petrosar settlement costs appropriate for rate-setting purposes for 1989?

Is the accounting treatment for the write-off of the U.S. Steel Cumberland mine advances appropriate for rate-setting purposes for 1989?

Is the accounting treatment of heavy water production costs and unit mass costs appropriate?

Are there any new accounting policies or changes in previous accounting policies which have an impact on 1989 rates?

Energy Management

What impact will Hydro's Marketing activities have on the size and pattern of demand for electricity in the future and specifically for 1989?

What programs of grants and low interest loans does Hydro propose to introduce in the next three years? What is the objective of these programs? How will Hydro allocate these funds? What cost benefit or other analysis was performed in establishing these programs? What costs will Hydro incur as a result of these programs and how will they be treated for rate making purposes?

Net Income

How is the financial performance of Hydro measured and assessed? What changes are expected in Hydro's financial performance in 1989?

What factors have constrained Hydro's ability to achieve its forecast level of net income in recent years?

Is the proposed level of net income for 1989 appropriate?

Cost Allocation

What are the principles that underly Hydro's proposal for the costing and pricing of electricity for 1989? Have any of these principles changed since 1987 or since the moratorium on rate design changes ceased?

What changes, if any, is Hydro proposing to its cost allocation methods and process?

Rate Design

Are the new rate structures proposed by Hydro for 1989 appropriate? What is the basis for the new rate structures proposed for 1989?

Are Hydro's special condition rates reasonable and appropriate for 1989? Will any new special condition rates be implemented in 1989? If yes, which ones and why?

Policy

Any policy questions that have been raised as a result of examination of any of the preceeding issues.

(b) The following are the issues to be dealt with through written interrogatories:

Electricity Sales

What are the major assumptions that underly the long-term load forecast proposed by Hydro? How does Hydro test the validity of the long-term forecasts?

Marketing

What are Hydro's plans for the sale of Tritium?

Are Hydro's direct advertising expenditures appropriate and cost effective?

OM&A

Are Hydro's indirect advertising expenditures and other contributions to outside agencies appropriate and cost effective?

Other Issues

What level of Candu design capability should Hydro maintain?

2. The order of direct examination, cross-examination and re-examination for this hearing shall be as follows:

(a) Where the witness is presented by a party, other than Board Staff,

- i) Direct examination by the party presenting the witness,
- ii) Cross-examination by Board Staff,
- iii) Cross-examination by intervenors and Hydro, other than the party presenting the witness, in alphabetical order,
- iv) Cross-examination by Board,
- v) Re-examination by Board staff,
- vi) Re-examination by the party presenting the witness;

(b) Where the witness is presented by Board Staff

i) Direct examination by Board Staff

ii) Cross-examination by intervenors and Hydro, in alphabetical order,

iii) Cross-examination by Board,

iv) Re-examination by Board staff.

ISSUED at Toronto this 19th day of May, 1988.

ONTARIO ENERGY BOARD

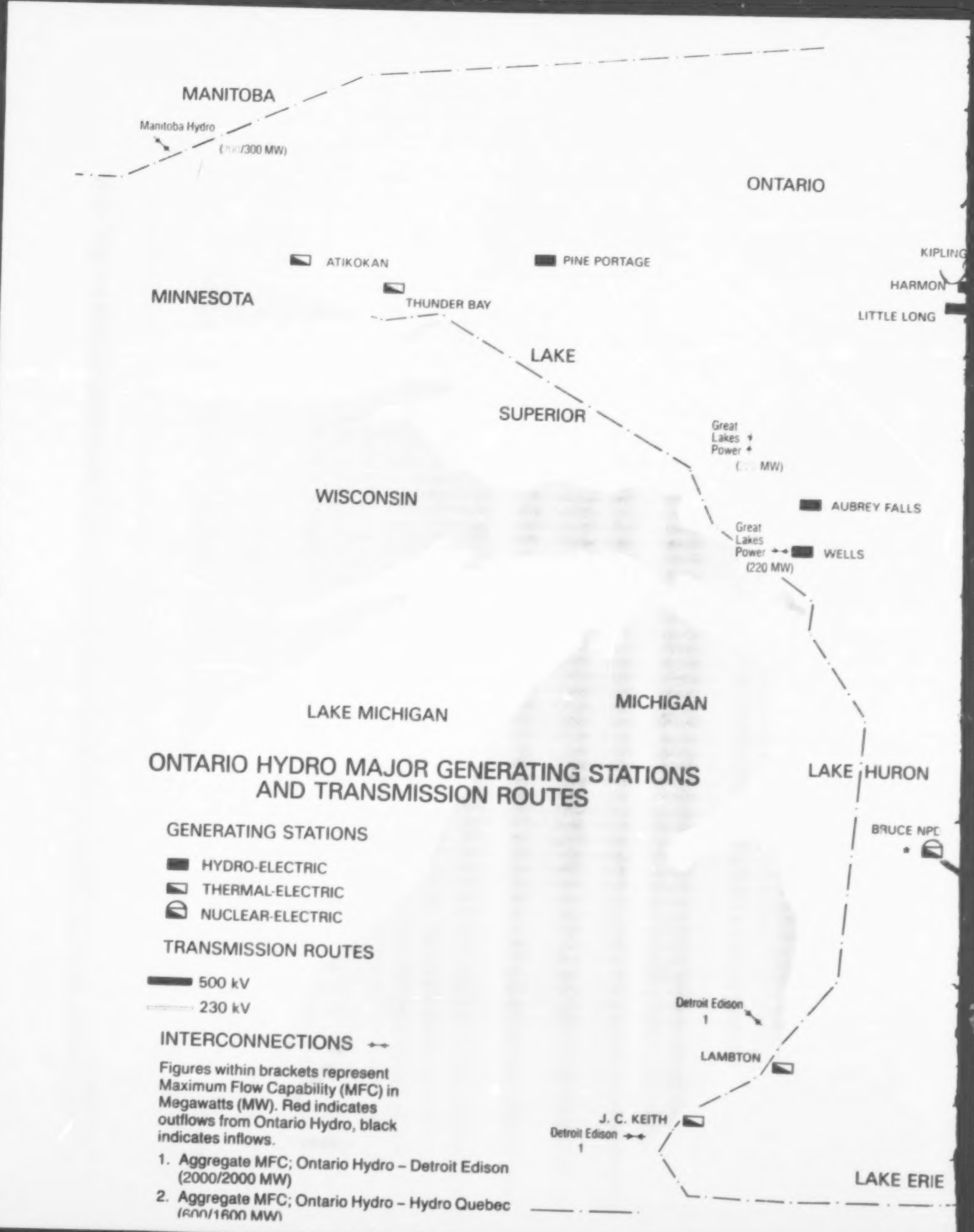
S.A.C Thomas
Board Secretary

Appendix D

Maps of Ontario Hydro's Area of Operation

1. Ontario Hydro Major Generating Stations and Transmission Routes

2. Northeast American and Canadian Interconnected Power Systems Load and Capacity Situation



MANITOBA
Manitoba Hydro
(200/300 MW)
ONTARIO
ATIKOKAN
PINE PORTAGE
KIPLING
HARMON
MINNESOTA
THUNDER BAY
LITTLE LONG
LAKE
SUPERIOR
Great Lakes Power
([illegible] MW)
WISCONSIN
AUBREY FALLS
Great Lakes Power
(220 MW)
WELLS
LAKE MICHIGAN
MICHIGAN
LAKE HURON
BRUCE NPD
Detroit Edison
1
LAMBTON
J. C. KEITH
Detroit Edison
1
LAKE ERIE

ONTARIO HYDRO MAJOR GENERATING STATIONS AND TRANSMISSION ROUTES

GENERATING STATIONS

▬ HYDRO-ELECTRIC
◪ THERMAL-ELECTRIC
◒ NUCLEAR-ELECTRIC

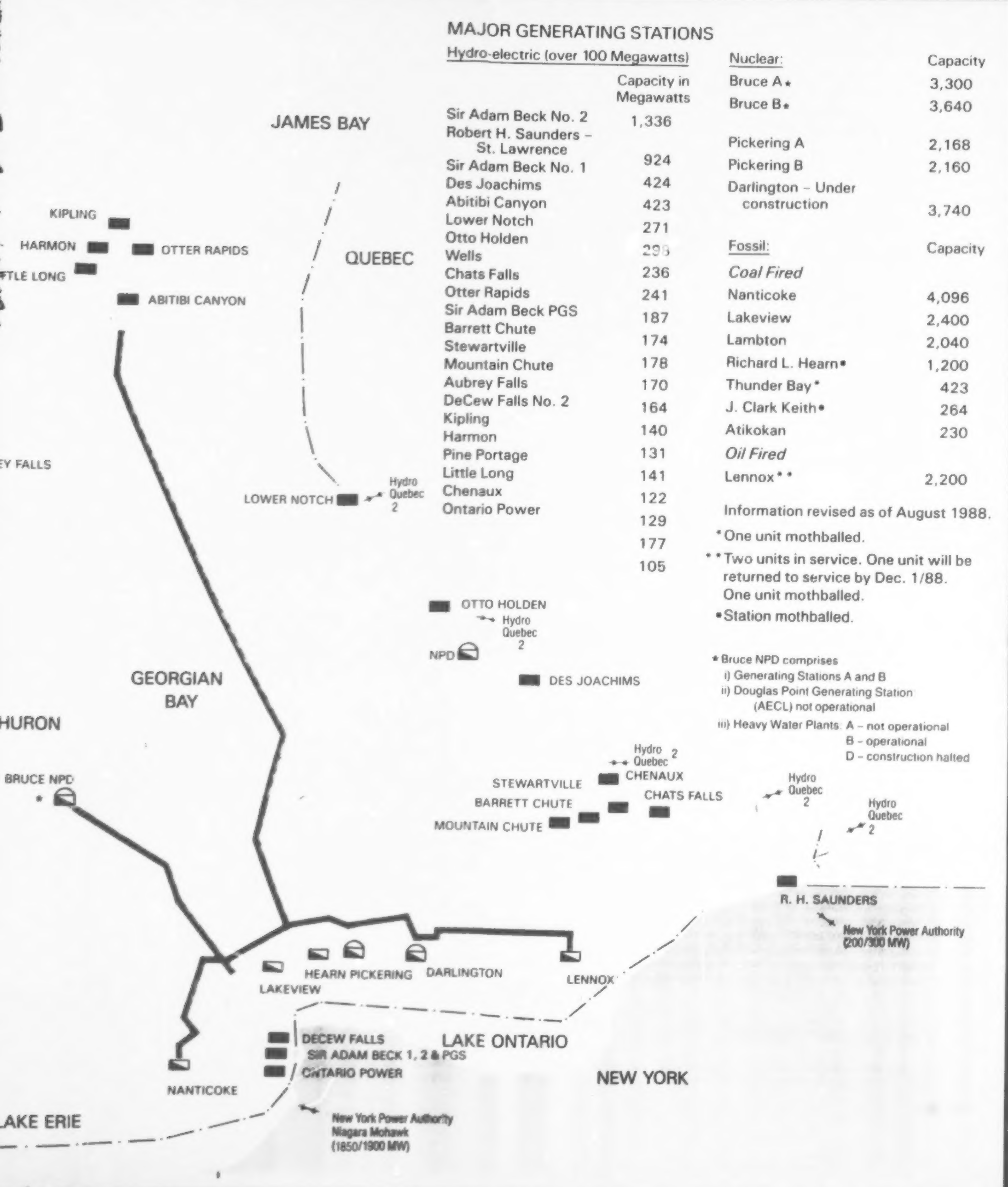
TRANSMISSION ROUTES

▬ 500 kV
— 230 kV

INTERCONNECTIONS ↔

Figures within brackets represent Maximum Flow Capability (MFC) in Megawatts (MW). Red indicates outflows from Ontario Hydro, black indicates inflows.

1. Aggregate MFC; Ontario Hydro – Detroit Edison (2000/2000 MW)
2. Aggregate MFC; Ontario Hydro – Hydro Quebec (600/1600 MW)


JAMES BAY
KIPLING
HARMON
OTTER RAPIDS
TLE LONG
ABITIBI CANYON
QUEBEC
EY FALLS
LOWER NOTCH
Hydro Quebec 2
OTTO HOLDEN
Hydro Quebec 2
NPD
DES JOACHIMS
GEORGIAN BAY
HURON
BRUCE NPD
Hydro Quebec 2
CHENAUX
STEWARTVILLE
BARRETT CHUTE
CHATS FALLS
MOUNTAIN CHUTE
Hydro Quebec 2
Hydro Quebec 2
R. H. SAUNDERS
New York Power Authority (200/300 MW)
LAKEVIEW
HEARN PICKERING
DARLINGTON
LENNOX
DECEW FALLS
SIR ADAM BECK 1, 2 & PGS
ONTARIO POWER
LAKE ONTARIO
NANTICOKE
NEW YORK
LAKE ERIE
New York Power Authority Niagara Mohawk (1850/1900 MW)

MAJOR GENERATING STATIONS

Hydro-electric (over 100 Megawatts)	Capacity in Megawatts
Sir Adam Beck No. 2	1,336
Robert H. Saunders – St. Lawrence	
Sir Adam Beck No. 1	924
Des Joachims	424
Abitibi Canyon	423
Lower Notch	271
Otto Holden	
Wells	298
Chats Falls	236
Otter Rapids	241
Sir Adam Beck PGS	187
Barrett Chute	174
Stewartville	
Mountain Chute	178
Aubrey Falls	170
DeCew Falls No. 2	164
Kipling	
Harmon	140
Pine Portage	131
Little Long	141
Chenaux	122
Ontario Power	129
	177
	105

Nuclear:	Capacity
Bruce A*	3,300
Bruce B*	3,640
Pickering A	2,168
Pickering B	2,160
Darlington – Under construction	3,740

Fossil:	Capacity
Coal Fired	
Nanticoke	4,096
Lakeview	2,400
Lambton	2,040
Richard L. Hearn•	1,200
Thunder Bay*	423
J. Clark Keith•	264
Atikokan	230
Oil Fired	
Lennox**	2,200

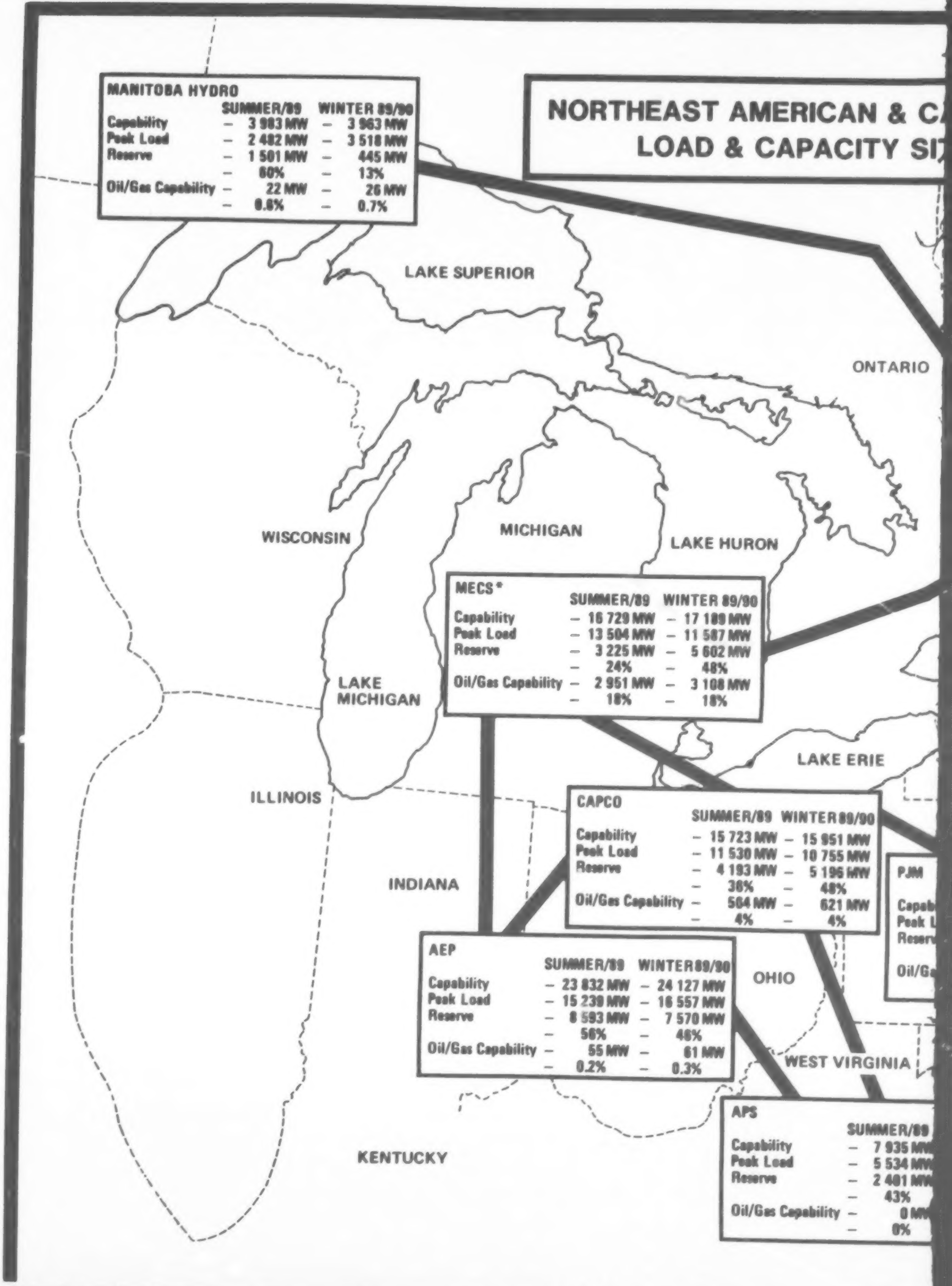
Information revised as of August 1988.

* One unit mothballed.

** Two units in service. One unit will be returned to service by Dec. 1/88. One unit mothballed.

• Station mothballed.

* Bruce NPD comprises
i) Generating Stations A and B
ii) Douglas Point Generating Station (AECL) not operational
iii) Heavy Water Plants: A – not operational
B – operational
D – construction halted


LAKE SUPERIOR
ONTARIO
WISCONSIN
MICHIGAN
LAKE HURON
LAKE MICHIGAN
LAKE ERIE
ILLINOIS
INDIANA
OHIO
WEST VIRGINIA
KENTUCKY

NORTHEAST AMERICAN & CA
LOAD & CAPACITY SI

MANITOBA HYDRO

	SUMMER/89	WINTER 89/90
Capability	– 3 983 MW	– 3 963 MW
Peak Load	– 2 482 MW	– 3 518 MW
Reserve	– 1 501 MW	– 445 MW
	– 60%	– 13%
Oil/Gas Capability	– 22 MW	– 26 MW
	– 0.6%	– 0.7%

MECS*

	SUMMER/89	WINTER 89/90
Capability	– 16 729 MW	– 17 189 MW
Peak Load	– 13 504 MW	– 11 587 MW
Reserve	– 3 225 MW	– 5 602 MW
	– 24%	– 48%
Oil/Gas Capability	– 2 951 MW	– 3 108 MW
	– 18%	– 18%

CAPCO

	SUMMER/89	WINTER 89/90
Capability	– 15 723 MW	– 15 951 MW
Peak Load	– 11 530 MW	– 10 755 MW
Reserve	– 4 193 MW	– 5 196 MW
	– 36%	– 48%
Oil/Gas Capability	– 504 MW	– 621 MW
	– 4%	– 4%

PJM

Capab
Peak L
Reserv
Oil/Ga

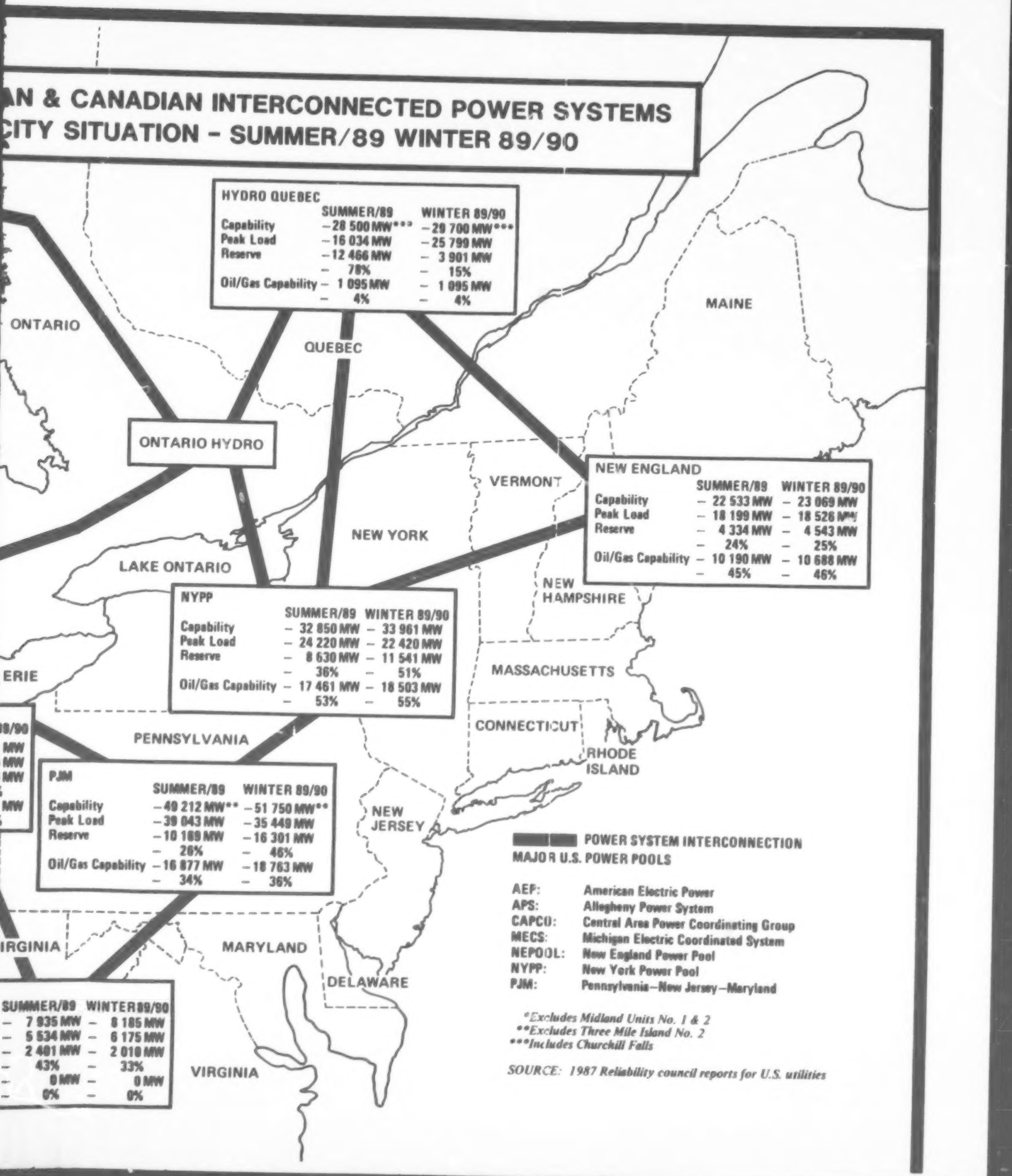
AEP

	SUMMER/89	WINTER 89/90
Capability	– 23 832 MW	– 24 127 MW
Peak Load	– 15 239 MW	– 16 557 MW
Reserve	– 8 593 MW	– 7 570 MW
	– 56%	– 46%
Oil/Gas Capability	– 55 MW	– 61 MW
	– 0.2%	– 0.3%

APS

	SUMMER/89
Capability	– 7 935 M
Peak Load	– 5 534 M
Reserve	– 2 401 M
	– 43%
Oil/Gas Capability	– 0 M
	– 0%

AN & CANADIAN INTERCONNECTED POWER SYSTEMS
CITY SITUATION - SUMMER/89 WINTER 89/90


ONTARIO
QUEBEC
MAINE
ONTARIO HYDRO
VERMONT
NEW YORK
LAKE ONTARIO
NEW HAMPSHIRE
ERIE
MASSACHUSETTS
CONNECTICUT
RHODE ISLAND
PENNSYLVANIA
NEW JERSEY
IRGINIA
MARYLAND
DELAWARE
VIRGINIA

HYDRO QUEBEC

	SUMMER/89	WINTER 89/90
Capability	– 28 500 MW***	– 29 700 MW***
Peak Load	– 16 034 MW	– 25 799 MW
Reserve	– 12 466 MW	– 3 901 MW
	– 78%	– 15%
Oil/Gas Capability	– 1 095 MW	– 1 095 MW
	– 4%	– 4%

NEW ENGLAND

	SUMMER/89	WINTER 89/90
Capability	– 22 533 MW	– 23 069 MW
Peak Load	– 18 199 MW	– 18 526 MW
Reserve	– 4 334 MW	– 4 543 MW
	– 24%	– 25%
Oil/Gas Capability	– 10 190 MW	– 10 688 MW
	– 45%	– 46%

NYPP

	SUMMER/89	WINTER 89/90
Capability	– 32 850 MW	– 33 961 MW
Peak Load	– 24 220 MW	– 22 420 MW
Reserve	– 8 630 MW	– 11 541 MW
	– 36%	– 51%
Oil/Gas Capability	– 17 461 MW	– 18 503 MW
	– 53%	– 55%

89/90
MW
MW
MW
%
MW
%

PJM

	SUMMER/89	WINTER 89/90
Capability	– 49 212 MW**	– 51 750 MW**
Peak Load	– 39 043 MW	– 35 449 MW
Reserve	– 10 169 MW	– 16 301 MW
	– 26%	– 46%
Oil/Gas Capability	– 16 877 MW	– 18 763 MW
	– 34%	– 36%

SUMMER/89	WINTER 89/90
– 7 935 MW	– 8 185 MW
– 5 534 MW	– 6 175 MW
– 2 401 MW	– 2 010 MW
– 43%	– 33%
– 0 MW	– 0 MW
– 0%	– 0%

▬▬ **POWER SYSTEM INTERCONNECTION**

MAJOR U.S. POWER POOLS

AEP:	American Electric Power
APS:	Allegheny Power System
CAPCO:	Central Area Power Coordinating Group
MECS:	Michigan Electric Coordinated System
NEPOOL:	New England Power Pool
NYPP:	New York Power Pool
PJM:	Pennsylvania–New Jersey–Maryland

**Excludes Midland Units No. 1 & 2*
***Excludes Three Mile Island No. 2*
****Includes Churchill Falls*

SOURCE: 1987 Reliability council reports for U.S. utilities

Appendix E

Ontario Hydro's Response to the OEB's H.R. 16 Recommendations

November 10, 1987

Tom Campbell Chairman of the Board

November 10, 1987

Honourable Robert Wong
Minister of Energy
56 Wellesley Street West
12th Floor
Toronto, Ontario
M7A 2B7

Dear Minister:

As you know, the Ontario Energy Board released their report on the recent rate hearing on September 17. At a special meeting on September 28 called to consider 1988 rate options in light of the OEB's recommendations and management's proposed positions in response, the Hydro Board authorized management to move ahead with developing rates based on an average 4.7 per cent increase, subject to further review and approval at the next meeting.

At their October 19 meeting, the Hydro Board approved a 4.7 per cent rate increase, which was announced publicly on October 20.

At their meeting yesterday, the Hydro Board approved the attached responses to the OEB recommendations. Included in this package are also the Hydro Board's comments on recommendations directed by the OEB to you, as well as some views on selected other comments and conclusions in the OEB report which were not formal recommendations.

I would be pleased to discuss Hydro's approach on any of these matters with you at your convenience.

Sincerely,

Attach.

c: Hon. David Peterson
Hon. Robert Nixon
Mr. Robert Macaulay

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OEB Recommendation 16 (pg. 7/5)

The Board recommends that Hydro's forecast of nuclear production be increased by 300 GWh due to a change in Bruce B's capability factor. This increase would have the effect of reducing the revenue requirement by $4 million.

OEB Recommendation 17 (pg. 7/5)

The Board recommends that Hydro's forecast of nuclear production also be increased by 95 GWh due to a lower DAFOR value for Pickering Units 5 and 6. This would have the effect of reducing the revenue requirement by $1 million using Hydro's estimates.

Hydro Response

Hydro does not accept these recommendations. Hydro indicated in its argument that reliability indices were being reviewed and could be updated in the near future. This process is now complete and certain indices have been adjusted. These changes to reliability indices, combined with in-service delays and revisions to outage plans, substantially reduce the forecast of aggregate nuclear production for 1988.

OEB Recommendation 18 (pg. 8/5)

The Board recommends that the proposed 1988 OM&A costs of $1.269 billion, as updated to July 14, 1987, be reduced by $35 million. This would have the effect of reducing the proposed rate increase in 1988 by approximately 0.7 percentage points. The Board estimates that in addition, approximately $7 million would be saved in the capital program. Hydro's senior management is to determine where these cuts should be made.

OEB Recommendation 21 (p. 8/12)

The Board recommends that Hydro exert every effort to reduce its labour costs. It will assume that Hydro can narrow the salary gap between itself and the community average by 1.5 percent in 1988 even though it recognizes that some of its salary levels and wage rates have already been fixed. This saving is part of the Board's overall recommended $35 million reduction in OM&A and represents approximately $13 million.

Hydro Response

Hydro does not agree with the OEB's recommendation that OM&A costs be reduced by $35 million in 1988, of which approximately $13 million could be obtained by reducing the differential between Hydro salaries and the community by 1.5 per cent.

The Board's recommended 1988 OM&A level of $1,234 million is a $35 million reduction from the updated OEB submission level of $1,269 million. However, the current budget guideline level of $1,274 million would require a $40 million reduction to meet the Board's recommended level.

During the summer of 1987, senior Hydro management conducted an extensive review of the Corporation's programs and resource requirements as part of the 1987 business plan process. Resource requirements were closely scrutinized.

Hydro Response

Hydro accepts the OEB's recommendation that the forecast of primary sales for 1988 be raised by 0.5 per cent. A 0.5 per cent error is within the uncertainty bands of the forecast. Hydro notes that the OEB chose to increase the forecast although Special Counsel and all intervenors supported Hydro's forecast of 1988 primary sales levels.

OEB Recommendation 7 (pg. 4/11)

The Board accepts MEA's position and recommends that Hydro increase its secondary sales forecast to 6,490 GWh. This would have the effect of reducing the revenue requirement for 1988 by $20 million, and the proposed rate increase by 0.4 percentage points.

Hydro Response

Hydro accepts the OEB's and the MEA's recommendations that the secondary sales forecast for 1988 be increased by 10 per cent to 6,490 GWh. In doing so, Hydro believes that the current outlook indicates a substantial risk that actual levels will be below the forecast.

It should be noted the revenue requirement impact as provided by the OEB is not correct. The MEA's recommendation provided in their final argument was made relative to the Hydro's original submission. The OEB have apparently taken the $20 million impact as if it were relative to Hydro's July 14, 1987 final update which had already incorporated a 1,900 GWh increase from Hydro's original submission to 5,900 GWh. By using MEA's recommendation the OEB have overstated the impact by about $15 million. Hydro verified the MEA's impact relative to the original submission as being correct, in the Appendix to Final Argument, page 8.

OEB Recommendation 15 (pg. 7/3)

Given that Hydro has underestimated water levels for the past four years, the Board recommends that Hydro increase its forecast of hydraulic production from 36,300 GWh for 1988 to 37,000 GWh. This would have the effect of reducing the revenue requirement by $12 million, and the proposed rate increase by 0.2 percentage points.

Hydro Response

Hydro accepts this recommendation. Hydro believes, however, that there is substantial risk that hydraulic conditions in 1988 will not permit this level of production to be realized.

OEB Recommendation 16 (pg. 7/5)

The Board recommends that Hydro's forecast of nuclear production be increased by 300 GWh due to a change in Bruce B's capability factor. This increase would have the effect of reducing the revenue requirement by $4 million.

OEB Recommendation 17 (pg. 7/5)

The Board recommends that Hydro's forecast of nuclear production also be increased by 95 GWh due to a lower DAFOR value for Pickering Units 5 and 6. This would have the effect of reducing the revenue requirement by $1 million using Hydro's estimates.

Hydro Response

Hydro does not accept these recommendations. Hydro indicated in its argument that reliability indices were being reviewed and could be updated in the near future. This process is now complete and certain indices have been adjusted. These changes to reliability indices, combined with in-service delays and revisions to outage plans, substantially reduce the forecast of aggregate nuclear production for 1988.

OEB Recommendation 18 (pg. 8/5)

The Board recommends that the proposed 1988 OM&A costs of $1.269 billion, as updated to July 14, 1987, be reduced by $35 million. This would have the effect of reducing the proposed rate increase in 1988 by approximately 0.7 percentage points. The Board estimates that in addition, approximately $7 million would be saved in the capital program. Hydro's senior management is to determine where these cuts should be made.

OEB Recommendation 21 (p. 8/12)

The Board recommends that Hydro exert every effort to reduce its labour costs. It will assume that Hydro can narrow the salary gap between itself and the community average by 1.5 percent in 1988 even though it recognizes that some of its salary levels and wage rates have already been fixed. This saving is part of the Board's overall recommended $35 million reduction in OM&A and represents approximately $13 million.

Hydro Response

Hydro does not agree with the OEB's recommendation that OM&A costs be reduced by $35 million in 1988, of which approximately $13 million could be obtained by reducing the differential between Hydro salaries and the community by 1.5 per cent.

The Board's recommended 1988 OM&A level of $1,234 million is a $35 million reduction from the updated OEB submission level of $1,269 million. However, the current budget guideline level of $1,274 million would require a $40 million reduction to meet the Board's recommended level.

During the summer of 1987, senior Hydro management conducted an extensive review of the Corporation's programs and resource requirements as part of the 1987 business plan process. Resource requirements were closely scrutinized.

The 1988 budget guidelines were not set until after the receipt of the OEB report and the careful consideration of the OEB's recommendations. With the exception of the amount suggested to be gained by reducing the salary disparity between Hydro and the community, the OEB has offered no rationale as to why these OM&A cuts should be made.

The OEB concludes that reliability would not be adversely affected by a cut in OM&A expenditures since reliability trends are a cyclical phenomenon. Hydro does not agree with this position on the basis that it runs counter to evidence presented in H.R. 16. Improving trends result from OM&A expenditures based on engineering judgments, and not from random or unknown causes. Unfavourable reliability trends indicate that expenditures are necessary to implement corrective action to improve reliability and, therefore, prevent the unfavourable trends from continuing.

The OM&A cost proposal reviewed by the OEB already included growth in salaries for Hydro's employees at a rate lower than that anticipated for the external community. Hydro believes it is unrealistic to expect that a further $13 million can be saved by reducing the differential between Hydro's salaries and the community average. About 65 per cent of Hydro's regular employees have their 1988 salaries fixed under the terms of Hydro's existing collective agreement with CUPE local 1000. Most of the balance of Hydro's regular employees are represented by the Society. The salaries for this group must be negotiated in late 1987 and early 1988. (If negotiations are unsuccessful, these salaries are subject to binding arbitration). Considering the range of realistic outcomes of this process, the OEB's assumption of savings of $13 million in OM&A and $7 million in capital due to a further 1988 reduction of 1.5 per cent in Hydro salaries compared to the community simply cannot be realized.

Hydro will continue to exert every reasonable effort to achieve its long term objective to maintain competitive compensation while narrowing the salary gap between itself and the reference community.

OEB Recommendation 31 (pg. 9/14)

The Board recommends that depreciation expense be reduced by $2 million for 1988. As such, the Board finds that $785 million is an appropriate provision for depreciation and decommissioning for Hydro's 1988 rate-making and budgeting purposes.

Hydro Response

Ontario Hydro accepts the OEB's recommendation that the 1988 depreciation expense be reduced by $2 million, by reducing the contingency factor on future pressure tube removal costs from 30 per cent to 25 per cent.

Ontario Hydro reiterates that there are substantial uncertainties associated with future pressure tube removal programs. While the experience gained on Pickering NGS Units 1 and 2 is very useful, there are new uncertainties with future retubing programs which are associated with:

- removal of the calandria tubes;
- need to remove end fittings from both ends of the channels;
- differences in reactor and vault designs between Bruce and Pickering type reactors; and
- possibility of adopting new removal techniques to shorten outages and reduce energy replacement costs.

In light of the above, Ontario Hydro continues to believe a contingency factor of 30 per cent would be appropriate. However, recognizing that the size of the contingency is ultimately judgmental, Ontario Hydro accepts that a 25 per cent factor is not imprudently low. On that basis, Ontario Hydro has accepted the recommendation.

OEB Recommendation 36 (pg. 10/12)

The Board recommends to the Minister that the Province of Ontario charge a fee to Hydro for the guarantee of Hydro's debt. The Board has calculated a debt guarantee fee of $27 million for 1988 and recommends that Hydro provide for this fee in its 1988 revenue requirement.

Hydro Response

Hydro fundamentally disagrees with the premise of this recommendation. The government's guarantee has never been called upon through Hydro's history, and costs the province nothing. Hydro believes it is inappropriate to make any provision in its revenue requirement to pay the government a fee for its guarantee of Hydro's borrowings, without explicit direction from government.

OEB Recommendation 40 (pg. 11/49)

Hydro should use a market-based concept of the cost of equity capital as one of the determinants of the appropriate level of net income.

Hydro Response

Hydro fundamentally disagrees with this recommendation. To adopt it would be a substantial departure from Hydro's traditional rate-making approach; would increase rates significantly, beyond a level necessary for the maintenance of financial soundness; would not be consistent with either the Power Corporation Act or Hydro's understanding of government policy; by asking Hydro to behave as an investor-owned entity, would offend basic notions of power at cost which for eighty years have been Hydro's guiding principles, to the benefit of the province; and, in Hydro's view, would require expressed authority and direction from government. Therefore, no provision for such additional cost has been included in the revenue requirement for 1988.

Hydro presented the above arguments at the hearing and received support from customer groups. Fundamental differences with the OEB remain on this issue.

OEB Recommendation 41 (pg. 11/60)

The Board urges Hydro not to adopt rate policies which bind it for long periods of time and potentially through dramatic changes in economic activity. The Board recommends that no new such policies be adopted before an opportunity is given for public review and debate in the annual rate review proceedings.

Hydro Response

Hydro notes that its long term rate objective for the 1980's is not binding, but does provide a useful target towards which to strive and offers a helpful discipline for cost control. Hydro believes that rate objectives, such as the no real rate increase for the 1980's target, can be reviewed at the annual rate hearings.

Hydro's 4.7 per cent rate increase in 1988 would achieve, according to the current outlook, a "real rate level during the 1980's" of 102 (1979 = 100). The current outlook still projects the achievement of 100 per cent of target net income in 1989.

OEB Recommendation 42 (pg. 11/69)

In the Board's view Hydro's cost of equity capital exceeds $515 million and may be in the order of $700 million. The Board recognizes the importance of gradualism, or "smoothing", in changing rate levels. As such, the Board recommends a level of net income of $515 million for 1988.

Hydro Response

Hydro believes that its planned 1988 net income of $487 million properly balances rate and financial considerations, and is an appropriate amount taking into consideration the purposes of the reserves for debt retirement and stabilization of rates. Such a level would result in net income that is 86 per cent of target, and would improve the debt ratio to 0.831 and level of interest coverage to 1.17. Furthermore, it would position Hydro to achieve 100 per cent of its net income target with a reasonable rate increase in 1989. In Hydro's view, market return concepts could result in net income levels exceeding $700 million.

OEB Recommendation 43 (pg. 12/5)

The Board recommends that monies flowing from the Petrosar dispute, being material in amount, should, when assured, be included in the next year's rate submission. It further recommends that the accounting treatment be consistent with the rate-making treatment. This will require deferring the income recognition of any funds recovered, or paid, to a subsequent year. Hydro's Board of Directors is urged to adopt this accounting treatment.

Hydro Response

Subsequent to H.R. 16, Hydro and Petrosar reached an out-of-court settlement of their contract dispute. Previous attempts at obtaining a termination of the contract had been unsuccessful, and ultimately Petrosar brought an action for damages arising out of a failure to take oil in 1981 and 1982. The Supreme Court of Ontario decided, in April 1986, that the fuel oil contract between Ontario Hydro and Petrosar was ended, and that Petrosar should return $25.5 million previously paid by Hydro in respect of 1981 and 1982, plus costs. Petrosar appealed this decision. Hydro estimated that, if Petrosar's appeal succeeded, the damages for the 1981-1992 period would be approximately $470 million. Counsel for Hydro advised that this litigation involved a substantial risk to Hydro and also advised that Hydro's defences for years subsequent to 1982 were weaker than those which the trial judge accepted. Accordingly, on Counsel's recommendation, all claims arising out of this contract were settled by a payment from Hydro to Petrosar of $150 million and the contract was terminated.

Hydro's Board of Directors has recently approved the recovery through future rates of the net cost related to the settlement of the Petrosar contract dispute. This will be achieved by deferring and amortizing the net settlement cost on a straight-line basis over the period 1988-1992, for both accounting and rate-making purposes. This is consistent with that part of the OEB recommendation which states that the accounting treatment should be consistent with the rate-making treatment, and that the income recognition of funds recovered or paid should be deferred. While the OEB recommended deferral to "a" subsequent year, five years was chosen as a reasonable recovery period, taking into account the impact on customers in any one year.

The OEB recommended that material monies flowing from the dispute should, when assured, be included in the next year's rate submission. This would ensure OEB review of Hydro's recommended accounting treatment prior to its implementation. However, the timing of the settlement makes such a review impractical. Since the settlement occurred subsequent to H.R. 16, the related cost was not known in time for inclusion in the 1988 rate proposal. While recovery of the cost could be commenced in 1989, thus allowing for a review by the OEB in H.R. 17, this would involve postponing the recognition and recovery of the material amounts involved for a full year. Hydro feels this would not be prudent. Hydro believes that its treatment follows the spirit of the OEB recommendation, since it provides for the recovery of amounts flowing from the dispute directly through rates, rather than indirectly through net income.

OEB Recommendation 44 (pg. 12/8)

The Board is of the opinion that the amount of the loss associated with the Cumberland Mine fire should be expensed in 1987 and not deferred. This fire should not be regarded as a usual or recurring event. Under generally accepted accounting principles it is appropriate to write off this non-recurring cost as an expense in the year of incurrence. In addition, conservative accounting principles support the concept of expensing the costs in 1987. Accordingly, the Board recommends that the 1988 revenue requirement be reduced by $8 million.

Hydro Response

Although Hydro believes that GAAP fully supports its original position, Hydro accepts the OEB's recommended alternative of writing off in 1987 the portion of its coal purchases representing recovery by U.S. Steel of the Cumberland Mine fire costs. Writing off part of the laid-down cost of Hydro's coal inventory purchases would only be required under GAAP if the full cost could not be recovered through the sale of electricity. This is not the case. However, there is greater flexibility in determining whether GAAP shall be applied when the item involved is immaterial. Considering the magnitude of Hydro's annual fuel costs, the write-off recommended by the OEB does not materially affect the results of either of the years affected. Therefore, Hydro can accept the OEB's recommended alternative.

OEB Recommendation 45 (pg. 13/6)

Based both on the Supreme Court's ruling in Nepean as applied to the facts in the class deficit recovery scheme of Hydro, and on its own merits, the Board finds Hydro's Rural and Direct sales class deficit recovery scheme ultra vires and unacceptable. The Board recommends that Hydro immediately abandon its class deficit recovery scheme.

Hydro Response

Hydro continues to believe that its class surplus refund/deficit recovery practice is allowed under the Power Corporation Act, and is appropriate and necessary to maintain the financial integrity of the retail system. Therefore, Hydro intends to recover a portion of the rural and direct class deficits in 1988 rates.

It is in the best interest of all customers that Hydro continue to monitor and refund/recover rural and direct customer class surpluses/deficits in order to avoid cross-subsidization among the customer groups. The existence of a deficit means that a particular customer group has not paid its way relative to the other customer groups, thereby resulting in a revenue shortfall and higher future costs for all customers. Consistent with the approved costing and pricing objective related to fairness, that particular class must be held responsible for it. In addition, contrary to the OEB's view, Hydro believes that the practice of recovering rural deficits does not contravene the Power Corporation Act.

Other Recommendations for Hydro

OEB Recommendation 2 (pg. 3/7)

The Board is not satisfied with Hydro's forecasting process. The Board recommends that, if Recommendation 24 relating to review of Hydro's staffing is adopted, particular attention should be given to the role and organization of the forecasting function at Hydro.

Hydro Response

Hydro understands the OEB's concern about the forecasting process to refer partly to the fear that an unpopular forecast which conflicts with corporate plans would be changed. Hydro agrees strongly with the OEB that "the corporation should respond to the forecast, not vice-versa," and has followed that rule scrupulously. However, the forecasters must interact with other departments in order to understand what forecast information is needed for Hydro's detailed planning process, and this interaction should not be interpreted as an attempt to influence the forecast values.

Hydro also notes that the OEB has expressed a concern about the costs involved in forecasting. Hydro is constantly monitoring costs in all areas, and believes that the costs of the forecasting effort are appropriate given the importance of forecasts in the generation planning process. The ongoing development of new end-use load forecasting models, which the OEB has endorsed in its Recommendation 6, is particularly labour intensive and has added to staffing requirements. (See also response to Recommendation 24).

OEB Recommendation 3 (pg. 3/9)

The Board recommends to Hydro that a thorough study of the potential impact of a free trade agreement on Hydro, which relies on independent outside advice where appropriate, be undertaken. The Board further recommends that such a study be reviewed in H.R. 17 if significant progress towards a free trade agreement has been made and circumstances warrant it.

Hydro Response

It has been Hydro's intention, once a free trade agreement was reached, to undertake a thorough study of the potential impact of a free trade agreement relying on independent outside advice where appropriate. Now that the free trade negotiators have released the contents of the agreement, it will be possible to begin such a study, and Hydro expects to have it sufficiently close to completion for presentation at H.R. 17 (if progress in the legislative ratification process makes this worthwhile).

OEB Recommendation 5 (pg. 4/9)

The Board recommends that Hydro simplify the Load Forecasting process and identify and statistically substantiate "judgement" and other adjustments employed in arriving at the Primary Load Forecast.

Hydro Response

Hydro has taken several steps in recent years to simplify the presentation of the load forecast to make it more readily understandable. Hydro intends to continue to try to make the load forecast more clear and comprehensible for all readers.

However, Hydro does not agree that the forecasting process itself should be greatly simplified, if by that the OEB means to use less of the available information and rely only on one or a few sources of forecast data.

Continuing to use all the available information requires that there be some judgment in the forecast process. The total impact of such judgment cannot be statistically "substantiated" because the effect of the exercise is integrated into the forecast itself. If the OEB wishes to take the difference between the customers' forecast and Hydro's forecast as one measure of judgment, Hydro can resume its tracking of the contribution such judgment has made in the past, and can track statistically whether that has improved or worsened the ex-post accuracy of the forecast.

OEB Recommendation 6 (pg. 4/9)

Hydro should implement long-term end-use models so as to provide an independent check on any Long-Term Forecast which may be contained in the DSOS. The Board considers this to be essential before a final decision is made by Hydro to commit to additional new generation.

Hydro Response

Long-term end-use models are being used in the preparation of the Long-Term Forecast. The new end-use models recently acquired will be tested and implemented before additional major new generation by Hydro is committed.

OEB Recommendation 8 (pg. 5/4)

The Board recommends that Hydro file in H.R. 17 a study to assess and quantify the impact of all quantifiable marketing programs, and to itemize with reasons any programs which cannot be quantified, including those programs aiming at reducing or shifting load. The terms of reference of the new study should be agreed upon jointly by Hydro's staff and Board staff in order to ensure that the Board's concerns are adequately addressed this time. The study should include all programs currently implemented or currently under testing and development for future implementation. The Board finds this information necessary when assessing Hydro's intention to implement strategic conservation programs.

Hydro Response

Hydro will file an exhibit in H.R. 17 which assesses and quantifies the impact of all quantifiable marketing programs and itemizes, with reasons, programs which are not readily quantifiable, including those programs aimed at reducing or shifting load.

Hydro met with OEB staff in February, 1987, to discuss a study on Hydro's evaluation capabilities. At that time, OEB staff appeared to have a clear understanding of the scope and nature of the study which was filed as an exhibit in H.R. 16. Hydro has already met with OEB staff to determine the Board's requirements with respect to the proposed exhibit for H.R. 17; further meetings are planned. Hydro expects OEB staff to be in a position to accurately reflect the concerns of the OEB in order to determine the requirements for the final report, recognizing that final decisions concerning the format or content of exhibits are Hydro's responsibility.

Hydro anticipates that sufficient information will be available at H.R. 17 for the OEB to assess Hydro's intention to implement strategic conservation initiatives.

OEB Recommendation 9 (pg. 5/7)

The Board recommends that Hydro implement more conservation programs and present evidence in H.R. 17 that they are not only serious about screening and testing conservation programs but also about implementing them more expeditiously.

Hydro Response

Hydro has several programs directed at helping customers make the most efficient use of electricity, whether it is for existing or additional uses. Despite the fact that the OEB states its definition of conservation is "not necessarily that less electricity be used but that the electricity which is used should be used wisely and efficiently" (page 5/4), this recommendation appears to be using the term strictly as load reduction.

Hydro is testing and is progressively introducing more "strategic conservation" (ie., incentive-based initiatives) into its customer programs to increase electrical efficiency and address the needs of the customers in an orderly and timely fashion.

The significant growth in expenditures for both natural and strategic conservation planned for 1988 and 1989 reflects Hydro's commitment to accelerated implementation. However, experience in other jurisdictions (eg. Bonneville Power Authority - H.R. 15) indicates substantial dollars can be saved through effective screening, testing and demonstration projects. Hydro intends to continue with its integrated approach to program development, anticipating this will provide the greatest value to customers in both the short and long run.

As it has in the past, Hydro will present evidence at H.R. 17 to demonstrate its commitment to energy efficiency.

OEB Recommendation 10 (pg. 5/10)

The Board is concerned that the Marketing Branch budget is supporting activities which operate at cross-purposes, namely load-building and load-reducing. To accommodate both within the same branch of an organization is, in the Board's opinion, unwise, if not impossible. Because of the recommendations contained in Chapter 6 concerning parallel generation, the Board will expect to hear new evidence in H.R. 17 on the results of the review of the structure and budget of the Marketing Branch.

Hydro Response

Hydro regularly assesses the appropriateness of its organizational structure. Hydro believes that it makes good business sense to accommodate all aspects of customer needs within one organization. This is the most effective way of ensuring the integration of these needs with corporate objectives. To have two separate groups, one selling and one conserving, would not only result in duplicate customer contact but would not be effective and would produce confusion among customers, and employees.

In order for customers to make the most effective use of electricity, Hydro provides information on new electrical applications that provide value to them as well as information on ways to use electricity more efficiently. Surveys consistently indicate that customers expect Hydro to provide this information to them and that customer satisfaction levels are among the highest in industry.

OEB Recommendation 13 (pg. 6/15)

The Board recommends a separate Parallel Generation Branch be established within Hydro. The Branch should be given the authority, and the technical and legal expertise, to carry out all necessary negotiations to finalize an agreement with an independent producer.

Hydro Response

Hydro is not persuaded of the need to establish a separate Parallel Generation Branch. However, Hydro's President indicated at H.R. 16 that the appropriate organizational placement of the parallel generation function is under review.

OEB Recommendation 14 (pg. 6/15)

The Board recommends that Hydro issue forthwith a simple, short, and clear statement of its positions on various aspects of parallel generation such as the methodology involved in calculating, and the level of, buy-back rates, interconnection standards, etc.

Hydro Response

Hydro accepts this recommendation. Hydro expects to have such a statement by the end of March 1988.

OEB Recommendation 19 (pg. 8/6)

The Board recommends that a clear and concise presentation of the trade-off between OM&A and Fuel and Fuel-related costs, said by Hydro to be important, be part of the pre-filed evidence in H.R. 17.

Hydro Response

Hydro will continue to develop its presentation of the trade-off between OM&A, Capital and Fuel and Fuel-related costs for H.R. 17, but notes that the relationship cannot be reduced to a simple equation.

OEB Recommendation 20 (pg. 8/9)

The Board recommends that Hydro review its instructions to its senior management to ensure that the importance and seriousness of the business planning process is clearly understood. The 5 per cent resource variation analysis should be provided on a consistent basis for each branch and the impact should be quantified to the greatest degree possible. The Board also expects Hydro to pre-file in H.R. 17 an analysis of how the Corporation as a whole would respond to a 5 per cent increase and a 5 per cent decrease in OM&A spending. The Board looks forward to reviewing improvements to the business planning process in H.R. 17.

Hydro Response

Hydro agrees with the OEB's recommendation on business planning and will report in H.R. 17 on an analysis of how the corporation would respond to a five per cent resource variation in 1989. Hydro's commitment to the business planning process is evident in the significant effort dedicated to the preparation of plans across the corporation.

OEB Recommendation 22 (pg. 8/13)

The Board recommends that Hydro address the issues of the "pay-for-performance plan" for Society-represented staff, and the "time-progression pay" for CUPE employees, and provide the Board with its conclusions and a strategy for their implementation as part of its pre-filed evidence in H.R. 17.

Hydro Response

Hydro has "pay for performance" plans in place. Hydro will review its compensation practices relative to the OEB's recommendation and provide a status report in H.R. 17. The implementation of changes in compensation plans are negotiable items with the Society and the OHEU and thus can only be changed through two-party bargaining.

OEB Recommendation 23 (p. 8/13)

The Board recommends that for H.R. 17 Hydro produce a more detailed, controlled comparison of its salary levels to those of the relevant community averages.

Hydro Response

Hydro agrees to provide comparisons of its salary levels to those of the relevant community averages where available. Comprehensive salary comparisons are developed to support contract negotiations. Since 1989 is not a bargaining year for OHEU staff, no new detailed salary comparisons will be developed for this group. The 15 company survey, which reflects salaries relative to Society-represented staff, will be updated for purposes of Society negotiations.

OEB Recommendation 24 (pg. 8/16)

The Board recommends that an independent external firm of management consultants be retained by Hydro to undertake a full review of its staff levels in all categories and present the results of this review at H.R. 17. The consultants and the terms of reference of this review must be acceptable to Board staff.

Hydro Response

In the spring of 1987, Hydro's senior managers concluded that a program to use external consultants to study productivity in the Corporation should be undertaken, leading to initiation of a program in August. Hydro will provide a status report on the progress of these studies at subsequent rate hearings.

OEB Recommendation 25 (pg. 8/19)

The Board approves Hydro's support of AECL research by providing financial assistance in the amount of $43 million in 1988. However, the Board is of the opinion that Hydro's customers are entitled to be reasonably assured each year that this funding is cost effective. Therefore the Board recommends that the actual amount expended by Hydro be monitored each year and expects information to be filed next year as to the nature, prudence, and value of the AECL funding.

Hydro Response

As shown in evidence, Hydro carefully monitors expenditures for AECL funding. Hydro will file information on AECL funding in H.R. 17.

OEB Recommendation 26 (pg. 8/26)

The Board recommends that Hydro identify and use a few key, clear, and well-defined productivity targets, for all of its major programs, that are consistent with clearly-defined objectives for these programs.

Hydro Response

Hydro agrees with the OEB's recommendations and is continuing to improve its productivity targets. Hydro notes that the Production Branch provided a detailed review of its performance and productivity factors in H.R. 16.

OEB Recommendation 27 (pg. 8/33)

The Board is not convinced that Hydro has adequately explored, or exploined, alternatives to de-mothballing Lennox. It recommends that Hydro report in detail in H.R. 17 on this matter and demonstrate the economic advantage of reopening Lennox in 1987 and keeping it open for 1988 and beyond.

Hydro Response

Hydro's position remains that there is no viable alternative to de-mothballing two units at Lennox. However, Hydro will provide information in next year's hearing detailing the advantages (both realized and anticipated) of returning Lennox to service.

OEB Recommendation 29 (pg. 9/8)

The Board recommends that on both the Income statement and the Balance Sheet Hydro present the decommissioning provision separately from other depreciation provisions. As an alternative, it is recommended that these provisions, as they appear on the Income Statement, be identified as "Depreciation and Decommissioning Costs".

Hydro Response

Hydro believes that decommissioning costs are not sufficiently material to disclose separately on the Statement of Operations and the Statement of Financial Position. For the same reason, Hydro also disagrees with the alternative recommendation that the caption 'Depreciation' on the Statement of Operations be changed to 'Depreciation and Decommissioning Costs'. The present practice is to disclose fixed asset removal costs, which include decommissioning costs and fuel channel removal costs, in the notes to the financial statements. These notes are an integral part of the financial statements and during the 1987 statement preparation process, consideration will be given to providing further information in these notes on the components of fixed asset removal costs.

OEB Recommendation 30 (pg. 9/10)

The Board recommends that Hydro prepare an updated or interim study on irradiated fuel disposal costs for H.R. 17 whether or not the AECL study is complete.

Hydro Response

Hydro accepts the recommendation that it should provide an interim report on irradiated fuel disposal for H.R. 17. It should be noted, however, that the concept will still be undergoing refinement, and it will not be until H.R. 18 that Hydro will be in a position to provide detailed information and refined cost data.

Hydro is confident that a safe, cost-effective, irradiated-fuel disposal centre can be developed. It has recognized, however, the importance of maintaining good progress on the concept development, and of obtaining timely approval from the appropriate regulatory authorities. To this end, it has increased its level of funding of the joint Atomic Energy of Canada Limited and Hydro program.

OEB Recommendation 32 (pg. 10/5)

The Board recommends that Hydro, in H.R. 17, provide a detailed sensitivity analysis to show the effect of the revenue requirement of swings in the size and timing of its borrowings during 1988 and for the 1989 rate proposal.

Hydro Response

Hydro agrees to provide sensitivity information which illustrates the effect on the revenue requirement of swings in the size and timing of its borrowings during 1988 and 1989.

OEB Recommendation 33 (pg. 10/5)

The Board recommends that Hydro strive to pay down its total debt and reduce future borrowing requirements.

Hydro Response

The Power Corporation Act makes specific provision for debt retirement to be included in rates and thus requires that debt be retired through charges in customers' rates over a specified period of time. In addition to this, Hydro will strive to minimize its outstanding debt to the extent that it does not impose an undue burden on current customers.

OEB Recommendation 34 (pg. 10/8)

The Board strongly recommends that Hydro's senior management be more actively and directly involved in the borrowing program.

Hydro Response

Hydro submits that its senior management plays a substantial role in the borrowing program and that there are already very significant controls by senior management on the borrowing program. This process will be reviewed before H.R. 17 to ensure its adequacy.

The annual Debt Management Strategy is approved each year by Hydro's Board of Directors. Each quarter, the Finance Committee of the Hydro Board and, subsequently, the Board of Directors review and approve the Corporation's quarterly financing program. The Board is apprised of the status of the borrowing program at its monthly meeting by the President. Senior Treasury staff meet monthly with the Executive Vice-President, Finance and Planning to review the financing strategy. This senior officer is also updated weekly on the program's status via a written report. In all instances, more frequent communication is initiated, whenever necessary and, in particular, at the time of a new financing. All new borrowings are undertaken subject to ratification by the Finance Committee and approval of the Lieutenant Governor in Council.

OEB Recommendation 35 (pg. 10/9)

The Board recommends an historical review by an independent expert of the timing of Hydro's debt placements to determine how well Hydro has performed since 1978. This should be filed as evidence in H.R. 17.

Hydro Response

Hydro undertakes to provide to the O.E.B. at H.R. 17 the necessary data for the OEB to review the timing of Hydro's debt placements since 1983 and, if the data are available, since 1978. Hydro staff will address this subject at H.R. 17. Hydro should be able to meet the OEB's objectives through filing evidence directly, rather than by obtaining external expert evidence; Hydro will work with OEB staff to determine the OEB's specific information requirements.

OEB Recommendation 37 (pg. 10/14)

The Board recommends that Hydro call an independent expert witness in H.R. 17 to provide evidence on the costs and benefits of Hydro's Debt Retirement Program. The choice of witness and the terms of reference should be agreed to by Board staff.

Hydro Response

At H.R. 16, Hydro presented expert external evidence on its debt retirement program. Hydro agrees to discuss again its debt retirement program, including the costs and benefits of the operation, at H.R. 17. Hydro should be able to meet the OEB's objectives through filing evidence directly, rather than by obtaining further external expert evidence; Hydro will work with OEB staff to determine the OEB's specific information requirements.

Mr. John Cook, of Dominion Securities Inc., who appeared as an expert witness at H.R. 16, provided an independent and impartial assessment of the debt retirement program. Hydro has formally consulted with a number of outside parties regarding its debt retirement program on several occasions (H.R. 10, Exhibit 19 - Debt Retirement Policy: A Review; H.R. 12, Exhibit 7.22 - Evaluation of Sinking Funds as an Alternative to Early Debt Retirement; H.R. 15, TR 2542, lines 3 - 24 and TR 3372, lines 13 - 18; H.R. 16, Exhibit 8.1.12 - Review of Ontario Hydro's Debt Retirement Program - Dominion Securities Inc.). Therefore, in Hydro's view, further evidence from external experts is unnecessary.

OEB Recommendation 38 (pg. 10/14)

The Board notes that the debt retirement strategy is primarily a debt retirement and liquidity program and not strictly a debt retirement program. The Board is of the view that the name of the Debt Retirement Program should be changed to the Debt Retirement and Liquidity Program in order to more accurately reflect is major focus, and urges Hydro to do so.

Hydro Response

Hydro will revise the name of its debt retirement program to reflect better its major focus.

OEB Recommendation 39 (pg. 10/17)

The Board recommends that additional independent evidence quantifying the cost and benefits of the foreign exchange management program be provided in H.R. 17. The Board will continue to scrutinize this area as it is one which can have material impact on the revenue requirement.

Hydro Response

Hydro presented independent expert evidence on its foreign exchange management program at H.R. 16 by Mr. Howard McLean of McLeod Young Weir. Hydro undertakes to provide to and discuss with the OEB at H.R. 17 the necessary data for the Board to assess the costs and benefits of the foreign exchange management program. Hydro should be able to meet the OEB's objectives through filing evidence directly, rather than by obtaining further external expert evidence; Hydro will work with OEB staff to determine the OEB's specific information requirements.

OEB Recommendation 46 (pg. 13/7)

The Board recommends that the issue of cost behavior and cost-tracking mechanisms to ensure better forecasts of costs by class of customers be addressed as part of the overall review of cost allocation and rate design in 1988.

Hydro Response

Hydro believes the main issue underlying this recommendation is the shortfall in revenue among certain customer classes. Hydro agrees to address MEA's concern in this area and will examine the factors contributing to customer class surplus/deficit for H.R. 17. Regarding the broader issue of an overall review of cost allocation and rate design. Hydro does not believe such a review is necessary (see response to Recommendation 47).

OEB Recommendation 47 (pg. 13/9)

The Board recommends that Hydro prepare a report summarizing objectives, principles, and practices which it believes appropriate for electricity rate design in Ontario. A proposal for appropriate revisions to electricity rates to conform to such objectives and principles should be included in this report. The report should be filed with the Minister within six months for public access and consideration.

Hydro Response

Hydro's electricity costing and pricing objectives and principles have already been reviewed by the OEB as part of the 1983 rate proposal (H.R. 11). In summary, these objectives are:

. rates should recover the annual revenue requirement;
. rates should be fair;
. rates should encourage the efficient use of resources so as to minimize costs to Ontario Hydro customers; and,
. rate structures should be publicly acceptable and comprehensible, and should be stable and feasible in application.

In its review of the proposed 1985 rates (H.R. 13), the OEB identified the need to clearly define the direction and to obtain more customer acceptance for any rate structure reform. Hydro has recently reached agreement-in-principle with MEA and AMPCO in this respect, and is in the process of developing an implementation strategy. Both the principles and the implementation strategy will be brought forward for OEB's review for H.R. 17. Hydro believes a separate report to the Minister is unnecessary.

OEB Recommendation 49 (pg. 13/14)

The proposed special condition Mechanical Pulping Rate is to become available July 1, 1989. Given the serious nature of the concerns which have been expressed, the Board recommends that the decision to offer this rate be delayed one year, that the rate be designed so as not to be restricted to a particular industry, and that the issue be reviewed in H.R. 17.

Hydro Response

This is a rate based on forecast system conditions and is available for only a limited time. Eighteen to 24 months are required to effect the installation of mechanical pulping. Delaying the offering of the rate one year would mean that the program could not start until mid-1990. This would substantially diminish the effectiveness of the program from both the customers' and Hydro's perspectives.

This rate is a specific application of the range rate concept reviewed by the OEB during H.R. 14. The terms and conditions for such rates are designed to ensure that eligible loads are compatible with system conditions and with the principles set out by the OEB (H.R. 14, p. 10/23). The rate is available to all industries who meet these terms and conditions.

Hydro will continue, as part of its annual submission, to inform the OEB as to the status of its special condition rates.

Other Recommendations For the Minister's Consideration

OEB Recommendation 11 (pg. 6/14)

The Board recommends that the Minister call for a special hearing to examine the issues relating to parallel generation. The Board recommends that the hearing be held in the fall of 1987 to examine at least the following issues:

1) The determination of buy-back rates;
2) Standardization of contracts;
3) Interconnection standards;
4) Arbitration provision; and
5) Power wheeling.

Hydro Position

Given the early stage of development in this area, Hydro's adherence to government policy, the significant progress made to date, the recent workshop held on this matter, and the potential for further review during next year's rate hearing, Hydro disagrees with this recommendation. Representatives of Hydro's Parallel Generation section meet regularly with Ministry of Energy staff and the parallel generation community to ensure that the program is responsive to government policy and programs and meets the needs of independent generators. The role of parallel generation will be a part of Hydro's future demand and supply planning strategy – see position on Recommendation 50.

OEB Recommendation 12 (pg. 6/14)

The Board recommends that the Minister designate an independent arbitrator to resolve problems and issues between Hydro and parallel generators until such time as a hearing has been held and the recommendations therefrom have been accepted by the Minister.

Hydro Position

Although sometimes requiring the advice and mediation of Ministry staff, issues between Hydro and parallel generators have been resolved without the need for arbitration. To obtain feedback and policy inputs, Hydro has held workshops with the Ministry of Energy and various industry groups.

The current process which attempts to arrive at solutions which are mutually satisfactory should be thoroughly tested and found wanting before it is replaced by another process.

OEB Recommendation 28 (pg. 9/8)

The Board recommends that the Minister call for an independent public hearing to review Hydro's decommissioning policies and costs. A special hearing would obviate, at least in the near-term, the need for an annual review, although the Board would also recommend a detailed examination of these decommissioning policies and costs at least once every five years.

Hydro Position

Hydro does not support the recommendation that the Minister call an independent public hearing to review Hydro's decommissioning policies and costs.

Hydro presented detailed studies of the methods and costs involved in decommissioning its CANDU generating stations at H.R. 16. Based on these studies, the provisions for these future costs were increased by more than 60 per cent. All available data, including current international knowledge and that gained from the major repairs to Pickering NGS reactors, were incorporated in these studies. At H.R. 16 it was stated that information from the Diablo Canyon decommissioning enquiry was not relevant to the CANDU system, since the station designs and seismic conditions are totally different.

In light of the above, Hydro does not believe a public hearing is necessary, or would serve any useful purpose.

Hydro will continue to monitor international developments, refine its own studies, and make any necessary adjustments in its provision for decommissioning costs. The OEB will be kept fully informed, as new information becomes available.

OEB Recommendation 48 (pg. 13/9)

The Board recommends that the Minister refer to this Board, for public review and recommendations, the issue of cost allocation and rate design for electricity pricing in Ontario, together with Hydro's proposals on the issue, filed in accordance with this Board's Recommendation 47, prior to the setting of 1989 rates. The Board emphasizes the importance of public review of this matter.

Hydro Position

Hydro does not support the recommendation that the Minister refer to the OEB, for public review and recommendations, the issue of cost allocation and rate design for electricity pricing in Ontario, together with Hydro's proposals on the issue, prior to the setting of 1989 rates.

In the late 1970's, the OEB conducted an extensive costing and pricing hearing, lasting over two years. Subsequently, the issues of cost allocation and rate design have been subject to annual reviews before the OEB. Hydro's rate reform proposals will form part of its 1989 rate proposal before the OEB in June, 1988. In Hydro's view, a separate reference is unnecessary. Hydro understands that its opinion regarding a separate reference is also shared by MEA and AMPCO. Since implementation of this recommendation would have a major impact on the two associations, Hydro suggests that their views be solicited before a decision is reached on this matter.

OEB Recommendation 50 (pg. 14/3)

The Board, having been assured by Mr. T. Campbell, Hydro's Chairman, that the DSOS would be released for public review by the end of the summer, and in accordance with the recommendation of the Select Committee on Energy, recommends to the Minister that the DSOS be subject to an extensive review through a public hearing either before this Board or elsewhere.

Hydro Position

Hydro expects to forward its Demand Supply Planning Strategy to government in the near future. Hydro supports the concept of a public hearing on the strategy and will discuss the matter with Government in due course. There is a variety of forums available for such a review, depending on the nature of the review contemplated by Government; the decision rests with Government.

OEB Recommendation 51 (pg. 14/4)

In light of the concerns raised in H.R. 16 on the subject of liability for major unforeseen incidents, such as a nuclear incident, the Board recommends to the Minister that this issue be explored fully in H.R. 17.

Hydro Position

Hydro does not support the recommendation that this issue be explored in H.R. 17. This is a matter within federal jurisdiction. The federal government is currently reviewing liability levels, and there is presently litigation before the Supreme Court of Ontario regarding the federal Nuclear Liability Act. The OEB would be duplicating efforts taking place elsewhere including the provincially appointed Hare Commission.

Other Comments and Conclusions

Throughout their report, the OEB have made a number of other comments and conclusions which are not necessarily captured in their formal recommendations. In Hydro's view, a more complete response to the report requires that some of these be addressed.

1. Concerns Relative to Section 37 of the Ontario Energy Board Act

The OEB has indicated that:

> There is apparently no concensus as to whether the Minister, when referring to the Hydro proposal to the Board for a public hearing, is authorized to limit the public hearing to something less than the full Hydro proposal as filed with him ... The Board's concern is that a reference under subsection 37(2) containing restrictions by the Minister may invalidate, in law the Board Report in that the directions of the Minister may be ultra vires. The Board believes that section 37 should be amended to make clear the basis on which the Board is required in law to hold a public hearing. (pages 1/6 - 1/7)

It is Hydro's position that the rate review, to be effective and efficient, should have a clear focus on rates and such other matters as specified in the Minister's letter of reference to the OEB. Hydro has noted the OEB's concern that specifics in the Minister's letter may be ultra vires of his authority. This view is not consistent with the normal practice of the Minister in administering the legislation.

2. Effectiveness of the Hydro Rate Review Hearing

At pages 1/7 and 1/8 of their report, the OEB has suggested that:

> In recent Reports the Board has made important recommendations concerning, among other things, the inappropriateness of Hydro's pricing policies, in particular: its failure to include the full cost of equity in net income and its propensity to defer recovery of other costs; its inability to control costs generally; the inappropriateness of the moratorium on rate design; and its tardiness in making public its system development plans. Hydro has, in the main, rejected these recommendations and, as a consequence, the Board is seriously concerned whether the hearings are any longer cost effective.

On this issue, Hydro finds itself in some agreement with the OEB, but for different reasons. Hydro has, for the reasons outlined in the response to recommendation 40, not moved towards a return on equity. At the hearing and elsewhere, Hydro has indicated to the OEB that their general views about "inability to control costs generally" are not helpful to Hydro in identifying ways to improve, and more specific reasons for recommended cost cuts are required. The rate design moratorium, which has just ended, was an attempt to gain consensus among customer groups on rate design changes, without which no change would be effective; consideration of rate design while the moratorium was in progress has, in the past, been excluded from the hearing in the Minister's reference letter. Similarly, system expansion has traditionally been excluded from the rate hearing by the Minister in his letter.

In Hydro's view, these various issues put forward by the OEB as areas in which Hydro has been unresponsive illustrate, in fact, a different phenomenon: the OEB making recommendations either outside Hydro's interpretation of its own mandate, or outside Hydro's interpretation of the OEB's mandate as restricted by the letter of reference. With respect, it is Hydro's view that Government should assist both the Ontario Energy Board and the Ontario Hydro Board in coming to an understanding of respective roles and responsibilities.

Hydro agrees with the OEB that the growing costs of the rate hearing are a concern. The estimated cost for this year's hearing is about $4 million; costs last year were approximately $2.6 million. These amounts include OEB and intervenor costs, for which Hydro pays, as well as Hydro's own expenses. Total hours to be spent at Hydro this year directly related to the hearing are estimated at about 80,000; the rate hearing has become a significant work program. In the interests of efficiency, Hydro suggests future rate reviews should focus more specifically on the rate increase proposal, and less on larger matters of public policy beyond the scope of the hearing.

As Hydro indicated at the hearing, over time the rates approved by the Hydro Board have aligned reasonably closely with those recommended by the OEB. If all OEB recommendations specific to the proposed rate increase had been followed since 1974, rates in 1988 would be 0.8 per cent higher (based on the H.R. 16 recommendation of a 3.7 per cent increase).

Hydro supports the concept of an annual public rate review. The annual OEB hearings offer an excellent opportunity for public access to Hydro and input on matters affecting the upcoming rate decision, and for Hydro to argue the merits of the organization before an independent body, customer groups, and others. In developing its approach on various issues for the hearing, Hydro's internal position can become strengthened and clarified. The public review process can be an important factor in public and customer confidence in Hydro's performance as an efficient, low-cost energy supplier.

3. Management's Understanding of the Law

The OEB takes the view that senior Hydro management does not have an understanding of the laws that govern Hydro's activities. At the hearing level, counsel have consistently maintained that witnesses should not be required to address the law and has been supported in rulings by the OEB itself. This does not seem unreasonable given the complexity of the issues involved. The OEB has interpreted this attempt to prevent witnesses from arguing law as a lack of understanding on the part of witnesses of how the legal issues affect their jobs. It implies that senior management should be conversant with for instance, Nepean. As the OEB has demonstrated, the interpretation of this case is not clear cut.

Senior Hydro management is aware of and understands the legal framework governing Hydro, and is entitled to rely on internal and external counsel's advice in this regard. However, management is not prepared to and should not be required to give evidence on legal issues at a hearing.

4. Need for an Independent External Management Audit

The OEB indicated in their report:

> Based on its previous experience, the Board has concluded that no matter what recommendation it makes, Hydro appears to give such recommendations little weight in budgeting OM&A expense. Hydro's Board of Directors should assess its senior management's capability and desire to carry out these oft-repeated recommendations. In H.R. 17, the Board will look for evidence that such a review has taken place. In the absence of such a review the Board will consider recommending the need for an independent external management audit to address its concerns.

Hydro has, over the past several years, presented the OEB with evidence that the submitted OM&A expenditure level is appropriate for operating a complex energy system safely and effectively. Additional detailed evidence was provided on a branch level basis via the OM&A specific panel format. Each year, more and more information has been filed to support and explain the need for a certain level of OM&A expenditure.

The OEB has recommended cuts in OM&A expenditures but failed to provide specific reasons for their conclusions as to why cuts were required. In management's judgement, an arbitrary cut to OM&A level will have a negative impact on the minimization of long-term costs.

Hydro values the OEB's scrutiny and independent review of Hydro's expenditures. However, Hydro's ability to take action on those recommendations is severely constrained when the report does not contain the specific rationale behind those recommendations.

As indicated in the response to recommendations 18 and 21, Hydro has recently conducted an extensive review of the Corporation's programs and resource requirements as part of the 1987 business plan process. Resource requirements were closely scrutinized and 1988 budget guideline levels were set in a constrained environment.

See also response to Recommendation 24.

5. Secondary Sales Issues

In the H.R. 15 report the OEB recommended that "Hydro submit evidence in H.R. 16 that identifies and substantiates the full range of social and monetary costs associated with secondary sales" (Rec. 7.23, page 7/10). Hydro responded to this recommendation that it would "be prepared to further discuss the monetary costs and the application of social costs associated with secondary sales in H.R. 16. However, the methodology and the level of social costs has been reviewed extensively by the National Energy Board (NEB) and Hydro is in compliance with NEB requirements in this regard. The Ministry of Energy, AMPCO and Energy Probe were active intervenors at this hearing. Hydro suggests that any further review of this matter should be conducted under the jurisdiction of the NEB."

In light of these positions, Hydro staff and OEB staff met to discuss the OEB's filing requirements in this area. Hydro staff prepared an outline of the material that it proposed be filed and went through each section in detail with OEB staff. OEB staff indicated that this would be adequate to satisfy the Board's recommendation.

The OEB states on page 4/12 "The evidence submitted by Hydro in H.R. 16 did not adequately address the Boards request in Recommendation 7.23". (H.R. 15). Hydro is concerned that matters which apparently had been resolved at the Hydro or OEB staff level are seen by the OEB as being unresponsive.

Hydro will arrange to meet with OEB staff to discuss this comment, and will seek clear direction on what data are required to meet the OEB's concerns in this area.

6. Presentation of Evidence at the Rate Review Hearing

In certain recommendations, (see Recommendations 8 and 37), the OEB has suggested that Hydro's evidence on various topics be cleared with OEB staff in advance of the hearing. Hydro will endeavour to meet the OEB's needs for information and evidence; this position is not new. For the most recent hearing, Hydro and OEB staff met several times to determine the prefiling requirements. In some cases, Hydro felt it had agreement with OEB staff which evaporated during the course of the hearing. Hydro will increase its efforts to work with all parties to the hearing to provide the data required, and will consider better documentation of any agreements achieved. Hydro will seek clear direction from OEB staff on what data are required to meet the OEB's concerns. However, it should be noted that in the final analysis, it is Hydro's prerogative to mount its evidence as it thinks most effective. The OEB's Special Counsel and other parties at the hearing are, of course, free to present whatever evidence they feel should be put forward; reasonable costs are awarded and charged to Hydro at the end of the hearing.

Appendix F

Summary of Arguments

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OSLER,
HOSKIN &
HARCOURT

H.R. 17

THE ONTARIO ENERGY BOARD

IN THE MATTER OF THE Ontario Energy Board Act, R.S.O. 1980, Chapter 332;

AND IN THE MATTER OF a reference to the Ontario Energy Board by the Minister of Energy in respect of the proposed bulk power rates or charges of Ontario Hydro for 1989.

ARGUMENT OF COUNSEL TO BOARD STAFF

July 8, 1988

F/1

End-Use Load Forecasting Models

Hydro acquired licenses to use three end-use models. They are still being built, calibrated and tested. Hydro acquired these models two years ago and it is submitted that Hydro should be encouraged to expedite the development of them.

Short-term Load Forecasting Models

Hydro uses three types of monthly forecasting models. They will yield a variety of results for 1989. It is submitted that Hydro should, in future rate reviews, provide a summary of the models used in determining the short-term load forecast and their associated diagnostic statistics, in a format similar to that presented by Dr. de Bever. Furthermore, Hydro should describe the quantitative and qualitative rationale supporting the proposed load forecast.

Load Forecast

Dr. de Bever provided the Board with a model to check Hydro's load forecast; it is a simple regression model using Ontario population growth and Ontario GDP. It is submitted that Hydro's economic growth forecast is overly optimistic and hence, its load forecast overstated. It is submitted that the Board should accept a load growth forecast of 7.3 percent over the two years. This, spread evenly, would result in approximately a $12 million reduction to net income.

Timing of Hydro's Forecasts

Hydro prepares three forecasts in the course of its planning cycle. There are significant time lags between each. The OEB reviews forecasts which will not be the basis of Hydro's rate proposal to be approved by its Board of Directors in the fall. It is believed that much confusion would be avoided and the process would become more effective if these forecasts were developed in a more simultaneous manner. An ability to generate and use the most up-to-date information will not only assist the Board but will also facilitate Hydro management's ability to plan and budget accurately and in a timely fashion.

Organization of the Economics and Forecast Division

The Cresap review fails to address the role of the division within the corporation. It is submitted that there was sufficient evidence from various Hydro managers in the proceeding to justify concern over the acceptance and integration of Division output within the Corporation.

It is submitted that the Cresap review should specifically address the role of the Economics and Forecast Division within the Corporation so that the substantial resources and output of the Division are efficiently allocated and utilized throughout the organization.

3. Fuel, Fuel Related

Fuel

Hydro forecasts that total primary and secondary electricity demand for 1989 will be 137 TWh. Total fuel costs are forecast to be $1,356 million.

The Simplex Technique

The Consistent Energy Set is a complex model which determines generation dispatch. It is submitted that Hydro ought to be in a position to use a simpler methodology to quickly assess the changes in the generation mix due to unforeseen outages. It is further submitted that Hydro ought to investigate applying programming techniques, such as the Simplex technique, or others, to determine the generation and fuel requirements. It is submitted that Hydro should report to the Board in H.R.18 on its effort to employ simpler techniques necessary to quickly determine its generation and fuel requirements.

Pricing of Secondary Sales

(a) Social Cost Adder

It is Hydro's position that the social cost adder found appropriate in 1981 by the NEB remains appropriate for the pricing of secondary sales for 1989.

It is submitted that Hydro should re-evaluate the social cost adder in light of heightened environmental concerns and new knowledge about the degradation of the environment caused by electricity production. Therefore, Hydro should prepare an updated study on the appropriate level of social cost adder for presentation to the OEB at next year's hearing.

It appears that Hydro Quebec developed a generation and transmission constraint on its system and that Ontario Hydro assisted by providing energy from Lennox at a price below its incremental cost. It is submitted that even though this is a incidental case, the principle of pricing export sales below cost and below the cost of supplying Ontario customers is contrary to Hydro's stated policy.

Lennox

Hydro reopened Lennox Units 1 and 2 in 1987 due to its concern over icing conditions. It is submitted that the study filed to demonstrate the economic advantage of reopening and maintaining Lennox for 1988 and beyond is flawed.

A review of peak demand and capacity requirements led Hydro to announce on May 17, 1988, that Lennox Unit 4 would be demothballed in time for the winter of 1988-89. There should be some concern about the method Hydro uses to "count" its reserves (reducing peak contribution and increasing reserve requirements) and the process by which the load forecast is adjusted (arbitrarily by the Production Division). Therefore, it is suggested that these problems should be brought to the attention of the Minister and that the Select Committee review the situation in connection with its review of the Demand Supply Planning Strategy.

It should be noted that without the 500 MW adjustment to the load forecast made by the operations division, there would be no forecast shortfall (Vol. V, P. 777) (Also see P. 12-13 of this argument).

Hydro is presently testing and inspecting Lennox Unit 3 to determine the cost and lead time required to have the unit in-service for 1989-90. It is submitted that the Board recommend that Hydro file for H.R.18, a report of its findings pertaining to the cost and lead time of demothballing Lennox Unit 3 for the winter of 1989-90. As well, the Board should be apprised of the reasonably anticipated status of all mothballed plants during the rate year in question.

Fuel Contracts

Ontario Hydro has in place approximately 35 contracts relating to its fuel supply arrangements, covering coal and uranium purchases and transportation. Hydro appears to have made progress in realizing lower prices and increased volume flexibility for some of its fuel supplies.

In November 1987 Hydro cancelled the USX Corporation Coal Purchase Agreement effective November, 1990. It is submitted that based on the evidence presented at H.R.17, Hydro's decision to cancel the USX contract was prudent.

The decision to cancel the USX contract raises the issue of Hydro cancelling one or the other uranium contracts (there is an oversupply of uranium and the purchase price well exceeds market price). It is submitted that present factors surrounding the uranium contracts closely parallel the recent past concerning the USX coal contracts.

The Board was advised in H.R.17 that Hydro's forecast uranium requirements have changed significantly since H.R.16 resulting in an increased uranium oversupply. It is necessary for Hydro to either make a negotiated arrangement with the Elliot Lake suppliers or perhaps even cancel the contracts when that opportunity is presented. The Board can only wait for Hydro to evaluate the problem and react accordingly.

4. OM&A

Total Operations, Maintenance and Administration (OM&A) program costs included in the 1989 revenue requirement are $1.524 billion. OM&A costs have increased steadily.

OM&A Labour Costs

In 1989, Hydro forecasts that its labour expense will be $1,577 million. It is submitted that staff levels remain too high. However, in light of the Cresap review it would be inappropriate to make any further submissions until further findings are revealed.

Hydro's negotiations with the Society required mediation and arbitration. Hydro's offer in arbitration was 3.9 percent, exactly what the mediator had recommended. The Society requested 4.1 percent. The arbitrator ultimately accepted Hydro's offer but commented that there was lack of a definitive benchmark. It is submitted that Hydro, in its negotiations with the Society in 1988, did not "exert every reasonable effort" to narrow the salary gap between itself and the community as Hydro had stated it would.

Beginning this year pay increases will be solely performance related, which is a constructive change that ought to be encouraged. A policy line adjustment (community increase) and merit adjustment determine the total "pot" of money for which the ESR staff compete. It is submitted that Hydro should abolish the policy line adjustment and that the "pot" should be composed of merit funding only.

When allocating this money, Hydro uses a grid which arrays performance levels against divisions of the salary range. Mr. Tyler testified that the scheme works to keep workers within their salary band. It is submitted that Hydro should address the apparent time progression philosophy presently embodied in this system. The effectiveness of the pay for performance contracts should be examined. For example the five indicators used to assess the Vice-President, Regions Branch are less than appropriate. It is submitted that, as part of the Cresap review, Hydro should seek advice on ways to improve Hydro's use of incentive tools.

Business Planning and Budgeting

The year 1988 was selected for detailed review of the business planning and budgeting process.

The planning and budgeting process can be described as incremental. The cycle begins with the prior year's budgets and the President's guidelines; it is submitted that there is little emphasis on challenging the appropriateness of the prior year's programs for current and future years.

Throughout the budgeting stage, it is submitted, there is little focus on adjustments to programs. Hydro does not repeat its program review in the budgeting stage. It appears that this phase compiles resource requirements of approved plans. Therefore, it is submitted that the Board can expect the proposed level of 1989 OM&A costs to increase further.

Hydro relies on the planning and budgeting process to monitor and control costs. This method is sound only if there is rigorous adherence to a policy of review and control. Cresap noted that the controller group's role as challengers of cost control is not well developed. It is submitted that this role must be strengthened if Hydro ever expects to control costs effectively.

Quality of Information Provided to Senior Management

An important part of the business planning process is the review of the plans by the Senior Management Committee (SMC). It was learned that deficiencies exist in the information provided to the SMC; for example, the ±5% analysis which is intended to identify and rank marginal program is of debatable quality. It is submitted that Hydro should do it right or not do it at all. Similarly, the quality of branch business plans varies greatly.

The SMC, and the OEB, must largely rely on the "judgment" of Hydro management to make informed decisions about programs and resources.

Short Run Orientation of Process

If Hydro is to be successful in providing value to its customers then it must take a long-run view to operating, managing and controlling its operations. However, when it comes to financial planning and budgeting, a short term bias is evident. Something should be done to focus the planning on the longer term. The focus must come from senior management.

Performance Measures

One way to exert control in a large organization is to set performance measures for both branches and managers to meet. It is submitted that the productivity indicators in the Regions Branch Vice President's performance contract highlight a problem in this regard. The targets are discussed at the last stage of the budgeting and planning process thus they are largely self-fulfilling and will have no impact on planning. They were set only for one year; thus the manager will work to achieve a short run target, not a long run target. Cresap has identified similar problems with Hydro's performance measures.

Hydro does not run its budgets through productivity models. Mr. Russell suggested that simple models were not useful when dealing with a large complicated organization such as Hydro. It is submitted, however, that it is for that very reason that consideration should be given to developing such a model.

It is submitted that productivity and performance measures for branches and management should be developed to ensure that managers are accountable for long term performance. This should be done in conjunction with Cresap's "Productivity Action Plan".

Control Within and Without Hydro

The business planning process has made many positive contributions. It is submitted that some deficiencies still exist. It is submitted that stronger emphasis could be placed on reducing existing, approved programs to offset required increases in programs. It is submitted that Hydro should review the information produced during the process such as branch business plans, sensitivity analysis and staff proposals to determine what is useful and effective. It is submitted that the business planning process is developing simply into a cost collection exercise rather than a process of effective cost control.

OM&A - Fuel Trade-Offs

Hydro has been claiming a direct link between OM&A and reliability and OM&A and fuel costs for several years. The relationship is especially important for H.R. 17 in light of the Nuclear Operations Hiring Program, which Hydro claims is needed to return the nuclear generation program to good operations levels. Hydro developed for H.R. 17 a Nuclear Cost versus Performance Model; it is still not complete. The Board should continue to encourage Hydro to quantify and improve its understanding of the link between OM&A and Fuel costs. Hydro should report at H.R. 18 on the progress of the Nuclear Cost versus Performance Model, the Thermal Capacity Energy Model, the Lakeview TGS Cost Reliability Model and any other models relating to this issue. The manner and extent to which they are integrated in budgeting and planning should also be presented.

It is submitted that this year the Board is in no better a position to recommend specific OM&A cuts, and that the Board ought to await the results of the Cresap reviews, with high expectations for 1990.

OM&A - Production Branch

Hydro requested that its Board of Directors on May 16, 1988 approve hiring 1,167 additional staff for the nuclear program over the next two years. This was an unusual action which resulted from a reassessment of the adequacy of the level of funding and staff for the nuclear operations function. It is submitted that the arguments in support of this program are not persuasive.

Circumvention of Business Planning Process

The special request to the Hydro Board, it is submitted, represents a pre-emptive strike by Hydro management. It is important to note that in the 1988 business planning process, the Production Branch was not allocated less staff or resources than requested. It is submitted that the circumvention of the standard budgeting process has not been adequately justified to this Board. The timing of this request is questionable, especially in light of the timing of the release of the Production Support Effectiveness Project (PSEP) on June 8, and the corporate-wide hiring freeze effected on June 9. It is submitted that most of the 223 support staff (of a total 751 employees) requested will be hired and exacerbate the problem of administrative and technical support staff inefficiencies which have been acknowledged in the Branch.

Presentation to Hydro Board of Directors

Hydro's Board was presented with a document to justify the requested Nuclear Hiring Program. Upon examination that document was shown to be extremely one sided and lacking in objectivity.

It is submitted that the stated impact of the program reflects only a small portion of the material amount of resources that the program implies. The true impact is in excess of $100 million to 1990; this is not indicated in the memo to the Board of Directors. Leaving the 1989 and subsequent years' impact to the normal planning process renders it impossible for the Hydro Board to reject the program.

The document presented to Hydro's Board makes repeated reference to information submitted to the OEB in last year's hearing. The OEB requested this information and was not persuaded by it. It is submitted that the maintenance backlog came to light only because the OEB requested substantiation of Mr. Niitenberg's request for funding in H.R. 15.

It is submitted that in several respects the memo did not provide Hydro's Board with sufficient information to allow the Board to make a balanced, informed decision. It is submitted that the arguments are not persuasive.

5. Capital Program and Depreciation

Capital Program

The total forecasted expenditures for the capital program in 1989 are $3.153 billion.

Darlington project costs forecast for 1989 are expected to be $480 million higher than those forecast at H.R. 16 due to construction delays and commissioning costs. Such overruns continue to be a source of frustration for this Board, as Hydro's system expansion has traditionally been excluded from the terms of reference for this hearing.

It is submitted that control of capital costs at Hydro appears to be weak. The Board has no choice but to accept the forecast capital program costs for 1989, but should review the Corporation's control processes as they affect capital costs, in detail in H.R. 18. If necessary, the reference should be expanded to authorize such a review.

Scrubbers

Hydro foresees a need to install scrubbers on its fossil fired generating stations to remove sulphuric oxides from the emissions of these plants. Hydro has filed an environmental assessment with the Minister of the Environment. It does not adequately address the question of an optimal economic solution. A detailed economic analysis of all alternatives must be developed and scrutinized before a $2.9 to $5 billion commitment is made.

It is submitted that a full public record should be developed on all aspects of this application. It is submitted that the Board should recommend to the Minister that the Government refer this issue to a single body to examine all aspects of this decision.

Depreciation

Total depreciation expense included in the 1989 revenue requirement is $844 million. No new cost estimates for decommissioning or the disposal of irradiated fuel were provided in H.R. 17. Irradiated fuel disposal costs remain a serious issue to be addressed by the Board.

Pressure Tube Service Lives

In H.R. 17 Hydro reduced the service lives of its pressure tubes at Pickering Units 3 and 4 and Bruce Units 1 and 2, the retubing dates of these stations have been advanced accordingly. It is submitted that the Board should accept the reduction in average service lives to reflect the new estimated retubing dates for Pickering Units 3 and 4 and Bruce Units 1 and 2.

Depreciation of Pressure Tubes

Hydro estimates the service life of a pressure tube based upon its unique characteristics. The average service life for pressure tubes includes the period between removal and replacement (one and one half to two years). It is submitted that this policy is inappropriate. The effect is to understate depreciation and the revenue requirement in 1989 by $1.8 million.

Fuel channel removal costs are also being provided for up to the point the new tubes are in-service. A shorter period for provision of those costs is appropriate. This increases the 1989 revenue requirement by $20.1 million. It is submitted that the revenue requirement for 1989 should be increased by $2 million relating to depreciation and $20 million relating to fuel channel removal provisions.

Pickering Retubing Costs - Contingency Factors

At H.R. 16 Ontario Hydro testified that a contingency factor of 19.9 percent had been realized up to that time on the Pickering Units 1 and 2 retubing. The final contingency rate was 24 percent. The methods used to calculate these rates are not consistent. Mr. Penn agreed that Hydro's body of knowledge has grown considerably as a result of retubing Pickering 1 and 2. Therefore, it is submitted that the contingency factor used to estimate the future cost of retubing nuclear units be set at 20 percent as not all of the uncertainties have not been eliminated but they are substantially lower. It is submitted that, the proposed 1989 revenue requirement be decreased by $4 million to reflect the lower contingency factor.

Irradiated Fuel Disposal Costs

Hydro has not updated its irradiated fuel disposal costs or its provisions. It is submitted that the Board is still faced with uncertainties regarding the future costs of irradiated fuel disposal and the related timing of these activities. It is submitted that Hydro should provide a full analysis of its cost estimates for irradiated fuel disposal costs and related provisions for the 1990 rate hearing.

Service Lives of Fossil Plants

In H.R. 17 the service lives of fossil stations were extended to 40 years from 30-35 years. The certainty of future use of these stations is no more strongly established than in H.R.16 or indeed H.R.14 when this question was first considered. The nature of the work to be done to rehabilitate the stations and install acid gas controls and the related future costs are, it is submitted, highly uncertain. Until Hydro obtains approval for its DSPS, and the costs of rehabilitation and acid gas controls are more certain, no change in average service lives for fossil stations is recommended. For this reason it is submitted that the 1989 revenue requirement should be decreased by $25 million.

6. Borrowing Program

Introduction

Hydro's interest and foreign exchange expense will represent about 32 percent of Hydro's 1989 revenue requirement. The evidence suggested increased senior management involvement in the borrowing program, and evidence that Treasury is becoming more proactive and responsive to alternative, cost-effective financing opportunities.

Hydro's Annual Borrowing Levels

The apparent lack of any capital availability limits on Hydro's borrowing and the large variations in actual net borrowing compared to forecasted borrowing is of concern. It appears that Hydro does not analyze the reasons for these "swings" to any great degree. As well, financing decisions follow spending decisions rather than being interlaced. It is submitted that Hydro's senior management should, through its more frequent involvement in reviewing the Borrowing Program, promote the development of the appropriate links between the planning of capital and operating spending, and borrowing requirements.

Debt Management Performance

The Debt Management Program shows declining performance over the 1985-87 period. It is submitted tht Hydro should undertake an internal review to examine overall performance. This should be filed with the Board in H.R.18.

Spread Management Program (SMP)

Hydro's SMP involves active trading in Hydro and Government of Canada bonds to stabilize yield spreads between them and reduce the cost of new debt. Given the uncertainty and high volatility of trading gains in the marketplace, a net benefit of the program is not a foregone conclusion. It is therefore submitted that Hydro should continue to refine and monitor the costs and benefits of the program and maintain tight control over volumes traded under the program.

Debt Restructuring

Hydro has targeted 10 percent of its outstanding debt as an appropriate level of floating rate debt, but is unable to support this target. Hydro acknowledged it to be arbitrary. It is submitted that Hydro should review its strategy and attempt to devise a policy based on rational rather than arbitrary criteria.

Foreign Exchange Risk Management

Hydro executed a Special Hedging Program in May as it believed that the Canadian dollar was overvalued. Hydro has made changes to its hedging targets since H.R.16. Target hedging levels are now based on costs. The evidence suggests that the Special Hedging Program decision was made by considering more than costs. It is submitted that Hydro should review the appropriateness of and application of its new target hedging level decision rule.

7. Financial Policy and Net Income

Financial Policy

In November, 1987 Ontario Hydro cancelled the Coal Purchase Agreement with USX Corporation. Hydro's Board of Directors has elected to defer and amortize the loss of $85 million of pre-production costs on a straight line basis over a five year period from 1989 to 1993. The effect on the revenue requirement for 1989 is $20 million. It is submitted that Hydro's deferral and amortization of the $85 million loss over five years is a reasonable accounting treatment for financial reporting purposes.

The $150 million payment to Petrosar in respect of a negotiated out of court settlement has been deferred and amortized, net of previous accruals, over a five year period starting in 1988. This has a $39.4 million impact on the 1989 revenue requirement. It is submitted that Hydro's decision to defer and amortize this payment over five years is appropriate for financial reporting purposes for the reasons stated by Hydro.

In early 1988 Hydro decided to discontinue capitalizing post production interest on the Denison-Mines uranium advance. This change has an $11 million impact on the revenue requirement in 1989. Hydro's decision is prudent in the circumstances and acknowledges some of the concerns raised by this Board in previous hearings. The larger issue of the value of the advances remains ($749 million, December 31, 1988).

The evidence in HR 17 indicates that the uranium supplies from Elliot Lake will need to be rationalized to eliminate an increased oversupply situation. The cessation of interest capitalization on Denison is an important step. Hydro continues to maintain that the value of the advances are sustained as long as the associated contracts are in place to provide future supply security and are of net economic value to Hydro. The Board is no closer to knowing how the contracts will ultimately be restructured and what the financial burden to Hydro's ratepayers might be.

In May of 1988 Hydro's Board approved the sale of 610/620 University Avenue and the purchase of 5000 Yonge St. The financial impact of the move is a $2 million decrease in 1989. Hydro will be accounting for the sale and purchase as an exchange of like-use assets. The Board was not presented with alternative accounting treatments which were considered for this transaction. It is submitted that the Board ought to have been apprised of all the details of this transaction, and the associated accounting and ratemaking alternatives. It is submitted that the Board should have the benefit of a complete discussion of the alternatives and justification for the basis selected.

Net Income

The estimated 1989 net income, as of June 29, is $741 million or 126% of Hydro's own financial targets.

Hydro witnesses stated that because of unusual "uncertainties" an unprecedented level of net income is warranted. It is submitted that the "uncertainties" which were said to exist at the time the original submission was filed with the Board either no longer exist or are considerably reduced. The uncertainties are essentially no different from those risks faced by Hydro in previous years. The only remaining reason to propose an unprecedented level of net income in 1989 is to achieve smooth rate increases beyond 1989. The Board has no way of testing Hydro's assumptions underlying the forecast level of future rate increases.

It is submitted that this ad hoc approach to determining net income levels is unacceptable. It is submitted that it is simply not possible to justify a level of net income of $741 million for the reasons offered by Hydro.

In the argument advanced by Special Counsel in H.R.16, two alternative methods for determining net income were proposed, a return on capital approach and a "bare bones" approach. Under the "bare bones" approach a level of net income of $367 million would result for 1989. It is submitted that some compromise between Hydro's proposal and the "bare bones" approach would be appropriate for 1989.

Last year Hydro's customers absorbed a rate increase of approximately 4.7 percent. It is submitted that the only reason for a similar increase this year would be to administer another "inoculation" to condition customers to the sizeable increase in rates expected when Darlington Unit 2 comes into service. A rate increase of 5 percent is surely the outer limit that should be tolerated in the interest of rates smoothing. It is submitted that even this level of net income would promote waste, is too high and cannot be justified.

Proposed Adjustments to Net Income

This Board has been concerned about the inequitable burden that the collection of some deferred costs may impose on future ratepayers. It is submitted that 1989 is the ideal year for Hydro to maintain a stable rate increase, yet still reduce future uncertainty by accelerating the write off of some of the costs it is deferring to future years. It is submitted that for 1989 Hydro should write off all of the unamortized Petrosar payment, and the unamortized forfeited advance to USX. The Hydro witness agreed that the character and size of an item would be considered in deciding whether to write off an unusual occurrence in one year. It is submitted that the circumstances this year justify such a treatment. These write offs would have the effect of reducing 1989 net income by $87.3 million (being the remaining amortization of the $145.5 million net cost of Petrosar), and $68 million, (being the remaining unamortized forfeited advance to USX) excluding interest. This will, of course, have no effect on cash flow or the borrowing requirement.

A rate increase of five percent, combined with the revenue requirement adjustments proposed (and set out in Appendix A), represents achievement of over 86 percent of Hydro's targets, a considerable improvement over past Hydro proposals. Accordingly, it is submitted that the Board should recommend that the level of net income for 1989 be set within the range previously established in this argument. If the middle or upper end of the range is to be preferred, it should only be permitted if coupled with the accelerated write off of the Petrosar payment and the USX advance.

8. Energy Management

Introduction

As part of the recent reorganization, the "Marketing Branch" has been renamed the "Energy Management Branch". For 1989, Energy Management's budget will be $78 million. $250 million will be allocated over the next four years as incentives to reduce electricity demand. In 1989, $8 million will be allocated to capital incentives and $33 million to capital.

Program Quantification

Hydro provided the total cost and MW impact of each quantifiable program for 1988 and 1989. However, the degree of judgement used by Hydro is not well understood and, it is submitted, does not add to the credibility of the quantified impacts. It is submitted that Hydro should provide a document in H.R.18 describing how, using specific examples, the expected impacts of a proposed program are derived, the origin of inputs used in this exercise and the role of judgement in the process.

Cost of Quantified Programs

It is submitted that Hydro should evaluate its energy efficiency programs based on the total lifecycle costs and benefits. This information is necessary in order to assess the economic viability of a program. It is submitted that Hydro should provide the lifecycle costs and benefits of the individual programs for H.R.18.

Consistency of Energy Management Goals with Municipal Utilities

Hydro cannot deliver demand management programs to its customers without the support of the municipal utilities, electrical contractors, manufacturers, consultants and associations. However, the evidence suggests that some of the groups are frustrating Hydro's objectives.

The introduction of the new time of use rate proposal creates the need for a strong effort on the part of Hydro to ensure that Hydro policies are carried out faithfully and that bulk power signals are transmitted to the retail level. It is therefore suggested that Ontario Hydro may have to become more active in the regulatory relationship with its municipal customers. It is submitted that this Board should be given the mandate to investigate that relationship in next year's hearing.

Tritium

Hydro states that it has made no decision concerning the sale of tritium and that the Atomic Energy Control Board and External Affairs have given no indication that the sale of tritium will be prevented. It is submitted that if Hydro intends to sell tritium, it should first have a formal rigorous plan in place to do so and this plan should be executed by the New Business Ventures division of the Energy Management Branch.

9. Rates

Introduction

In H.R.17 Ontario Hydro proposed a time of use (TOU) rate design. Together with the MEA and AMPCO, a consensus was developed regarding TOU rates in the form of a signed "gentleman's agreement" dated January 7, 1988. Except for the element of TOU rates the cost allocation process has not changed significantly from H.R.16.

Capacity/Energy Split

The issue of the division of the common costs into capacity and energy related components has been a major difficulty in the past. The proposed capacity/energy target of 42/58 falls within the range of results yielded by various accepted cost allocation methodologies. It is submitted that the target capacity/energy split of 42/58 is directionally correct and should be accepted by the Board.

Cost Allocation to TOU Periods

Ontario Hydro proposed four rating periods. These are winter peak, winter off-peak, summer peak and summer off-peak. The proposed daily peak period is from 7 a.m. to 11 p.m. It is submitted that the Board should accept these proposed rating periods.

Rate Differentials

The Board was assured by Mr. Conway that the negotiated rate period differentials fall within the reasonable range of results yielded from cost data analysis and were, in Hydro's judgement, acceptable. Miss Chown concludes that it is a reasonable compromise.

Accordingly, it is submitted that Hydro's proposed rate period differential targets for energy and capacity be accepted by the Board for the short term.

The Implementation Period

The target capacity/energy split and target differentials are to be phased in over the period 1989-92. It is submitted that the Board should accept this proposal with reluctance.

Ten Year Freeze

This rate proposal is to be "frozen" for ten years following the proposed four year phase in period. This freeze minimizes Hydro's flexibility to adjust to changing cost patterns and threatens "rate stability" if incremental changes are not recognized. Therefore, it is submitted that the Board should reject the ten year freeze and recommend that the cost ratios and capacity/energy split be reviewed annually.

Optional Time of Use Rates for Municipalities

It is submitted that to assure municipal acceptance that optional TOU rates at the wholesale level be maintained. Hydro believes that in the long term utilities will opt for TOU use rates, especially considering the "residual" cost allocation scheme proposed.

Time of Use Price Signals for End Users

Retail rate structures become relevant to the rate reform process in light of the introduction of the TOU rates. In an attempt to convey appropriate price signals to the end users, it is submitted that a review of rate setting principles at the retail level should be considered in H.R.18.

Agreement and Customer Acceptance

Under the term of the Memorandum of Understanding, Hydro will review matters concerning TOU rates should conditions warrant. The danger lies in determining what warrants a review and who must establish that conditions demand a re-evaluation. Customer acceptance, which was and still is a key part of this agreement, does not imply unanimous consent but only that a reasonable proportion of rational customers understand and accept the reasons for change. It is submitted that Hydro must regain control over its rate making responsibilities, subject to the review of this Board.

Empty Chair

It is submitted that the rural customers who were not represented in the negotiations on rate design should be represented in the future.

Special Condition Rates

The Intermittent Condition rate is not correctly priced. Should the Board continue to support Special Condition rates it is submitted that the Intermittent Rate be set at 14.2 mills/KWh. However it is submitted that the Board should accept Miss Chown's recommendations that the Special Condition rates be phased out as soon as possible. The history of these rates shows that Hydro's customers have not flocked to them as predicted and they provide potential for undue discrimination.

Rural Deficit Recovery

It is suggested that the Board request that the Rural Deficit Recovery Scheme Provisions be included in the review of the Power Corporation Act presently underway.

10. Cresap

For several years Ontario Hydro has been criticized externally for alleged endemic inefficiencies. While it is easy to criticize it is harder to take effective action to control an organization as large and complex as Ontario Hydro. Hydro management also appears to have been frustrated by such attempts. To the credit of present management, the Corporation sought assistance from an outside management firm, Cresap.

Cresap's preliminary findings suggest that there is room for productivity improvements throughout the Corporation. It also appears that a relatively significant proportion of Hydro's employees could be eliminated or redeployed.

It is submitted that the OEB should report that the commissioning of a study by an outside consultant was an excellent step, and that the President's stated resolve to develop a new, more efficient culture within Ontario Hydro should be firmly supported by all concerned.

It should be expected that there will be a lack of enthusiasm on the part of some managers whose direction has created the need for change in the first place.

Nevertheless, it is suggested that all participants to this hearing want the present initiative to succeed, and want to believe that it will succeed.

It is submitted that in the meantime we can only watch and wait.

APPENDIX A

Summary of Recomended Adjustments to Rate Proposal

Alternative 1:

	Original Submission $M	Proposed Adjustments $M	Adjusted Revenues and costs $M
Revenues			
Primary Sales	5,942	149 (a)	6,091
Secondary Sales	194	10 (b)	204
Total Revenues	6,136	159	6,295
Costs			
OM&A	1,417	59 (c)	1,476
Fuel and Fuel Related	1,290	221 (d)	1,511
Capital and Depreciation	839	48 (e)	887
Interest/Foreign Exchange	1,907	(16) (f)	1,891
Other	-	28 (g)	28
Total Costs	5,452	340	5,793
Net Income	684	(182)	502

Illustrative Financial Ratios Based on Ex. 1.1.5. Table 7-1	Original Submission	Proposed Adjustments to Financial Ratios	Adjusted Financial Ratios
Debt Ratio	0.824	.007	.831
Interest Coverage Level	1.23	(.082)	1.15
Cash Flow Coverage	1.25	(.082)	1.17
Rate Increase	5.5%	(.5%)	5.0
Adjusted Net Income			$502 million

Net Income sensitivity:+1% = +$56 million

Note: Columns may not add due to rounding.

/1

Alternative 2: "Bare Bones"

Net Income Required for Debt Retirement Appropriation (Ex. 1.1.5, P. 51) $367

Required Rate Increase
Net Income Per Updated Submission $741
Board Staff Adjustments 55 Notes (a),(e)
$686

Difference $686 -$367 = $319 : 56 = 5.7
No Rate Increase Required

Illustrative Financial Ratios Based on Ex. 1.1.5. Table 7-1	Original Submission	Proposed Adjustments to Financial Ratios	Adjusted Financial Ratios
Debt Ratio	0.824	.011	.835
Interest Coverage	1.23	(.129)	1.10
Cash Flow Coverage	1.25	(.129)	1.12

(a)	$161	Load Forecast May 25
	(12)	Load Forecast - Board Staff
	149	
(b)	$ (4)	Economic Outlook May 25
	14	Energy Production May 25
	10	
(c)	$3	Economic Outlook May 25
	53	Production May 25
	15	Demand Management Initiatives May 25
	(6)	Production June 28
	(5)	Corporate Cresap June 28
	(1)	Miscellaneous June 28
	59	
(d)	(10)	Economic Outlook May 25
	88	Load Forecast May 25
	14	Energy Production May 25
	(25)	Vacuum Building Maintenance June 28
	(1)	Financial Markets
	68	Write off of USX advance - Board Staff
	87	Write off of Petrosar Payment Board Staff
	221	
(e)	5	Miscellaneous May 25
	(4)	Fuel Channel Removal Provision Reduction of contingency factor - Board staff
	2	Depreciation - Pressure Tubes - Board Staff
	20	Provision for Fuel Channel Removal Costs - Board Staff
	25	Fossil Station service life extension not recommended - Board Staff
	48	
(f)	(22)	Economic Outlook May 25
	(10)	Miscellaneous May 25
	11	Increased Hedging June 28
	8	Financial Markets Outlook June 28
	(3)	Miscellaneous June 28
	(16)	
(g)	(28)	Proposed Net Income adjustment - Board Staff (0.5 percent rate reduction).

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HR 17

THE ONTARIO ENERGY BOARD

IN THE MATTER OF Ontario Hydro's
Proposal for 1989 Electricity Rates

EXECUTIVE SUMMARY OF THE FINAL SUBMISSION FILED BY THE ASSOCIATION OF MAJOR POWER CONSUMERS IN ONTARIO REGARDING 1989 ELECTRICITY RATES

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EXECUTIVE SUMMARY

1. HYDRO PROPOSES A 5.5% RATE INCREASE

Hydro proposes to increase electricity rates, effective January 1, 1989, by an average of 5.3% for municipal utilities and 6.2% for direct customers. The corresponding "all customers" rate increase, including a 5.7% increase to Hydro's rural customers, is 5.5%.

2. AMPCO'S SUBMISSION

AMPCO's submission on what the level of the rate increase should be in 1989 is based on only reducing one aspect of the revenue requirement - net income. The premise is that the 1989 net income should be reduced from $684M to $630M which results in an "all customer" rate increase of 3.7%. By not arguing for further adjustments that are surely within reach, AMPCO's approach allows Hydro an opportunity to earn a net income in excess of $630M.

A 3.7% increase is a level that will help to fight inflation and should encourage productivity improvements. In the circumstances forecast for 1989 any rate increase above 4% would be unconscionable.

CHAPTER 2 - ECONOMICS AND LOAD FORECASTING

2.1 FORECAST OF KEY ECONOMIC VARIABLES

RECOMMENDATIONS:

1. The forecast 1989 Canadian dollar foreign exchange rate be revised to $.80 U.S. from $.79 U.S.

2. Hydro extend CRESAP's mandate to examine how much of the work in the Economics and Load Forecasts Division needs to be done by regular staff.

REASONS AND COMMENTS:

(a) For the near-term future, the balance of influences on the Canadian dollar suggests a moderation of economic growth but a major recession is unlikely. Combined with the fact that the dollar is currently trading above $.82 U.S., the dollar is likely to remain above $.80 U.S. for 1988 and 1989;

(b) The major revisions in Hydro's economic forecasts show the meaningless nature of the probabilities that Hydro attaches to its forecasts and Hydro's forecasts have proven to be unreliable in the past; and

(c) All of Hydro's economic forecasts are extremely close to the average of the external forecasts that Hydro considers which leads AMPCO to question the human resources that Hydro has allocated to its Economics and Load Forecasts Division.

2.2 HYDRO'S LOAD FORECAST FOR 1989 IS TOO LOW

RECOMMENDATIONS:

1. Hydro's load forecast for 1989 be rejected and the average growth rate for 1989 be revised upward to at least 4.4% which is the seasonally adjusted average growth rate from 1982 to 1988.

2. Hydro explore the use of other EPRI models which are readily available.

REASONS AND COMMENTS:

(a) Hydro has shown a chronic tendency to underforecast since 1982. In HR 14, 15 and 16 Hydro had to make upward revisions to its Short Term Load Forecasts for the current years. Only in HR 15 did Hydro increase the growth rate for the rate year as well as the current year. Hydro's load forecasts were still low despite these upward revisions. In HR 17 Hydro has again made an upward revision to the Short Term Load Forecast. Similar to the updates in HR 14 and HR 16, Hydro has only revised the growth rate for the current year (1988) not for the rate year (1989);

(b) The evidence clearly shows that the information produced by the models presented in HR 17 has not been fully analyzed and that there are better EPRI models readily available to Hydro.

CHAPTER 3 - FUEL, POWER PURCHASES AND SECONDARY SALES

3.1 FORECASTS OF HYDRAULIC PRODUCTION

AMPCO accepts Hydro's forecasts of hydraulic production for 1988, 1989 and 1990 and the basis for making these forecasts.

3.2 ECONOMIC ADVANTAGES OF REOPENING LENNOX

Hydro has demonstrated that reopening Lennox was an economic and prudent move.

3.3 POWER PURCHASES

Hydro's forecast of power purchases is realistic.

3.4 COGENERATION AND PARALLEL GENERATION

RECOMMENDATIONS:

1. A public hearing(s) should be held as soon as possible to determine the appropriate policies and programs that Hydro should have with respect to cogeneration and parallel generation.
2. Hydro solicit comments from industry and government before completing its work on a possible competitive bidding process.

REASONS AND COMMENTS:

(a) AMPCO's position on cogeneration and parallel generation is the same as in HR 16; and

(b) Hydro said that it is developing a competitive bidding process for parallel generation projects larger than 5MW and that Hydro will be soliciting comments from industry and government before completing its work.

3.5 PRESSURE TUBE PROBLEMS AND NUCLEAR RELIABILITY

RECOMMENDATION: Hydro reduce the forecast of nuclear DAFORS in HR 17 to the levels predicted in HR 16.

REASONS AND COMMENTS:

(a) Hydro has raised its 1989 forecast of nuclear DAFORS on average by slightly more than one percentage point. Hydro says that the reasons for the upward adjustment are aging and major uncertainties;

(b) In 1989 the 8 units in Bruce "B" and Pickering "B" will have been in service 4 years on average - hardly creaking with old age. Despite this and the fact that the units at Bruce "B" and Pickering "B" are performing extremely well, Hydro has seen fit to raise the forecast of 1989 DAFORS on Bruce Unit 8 and Pickering Units 5, 6 and 7 from 7% in last year's forecast to 8% in this year's submission. Hydro has also raised 1989 DAFORS for Pickering Units 1 and 2 by 1.0 and 1.5% respectively even though both units have just been retubed and refurbished and cannot rationally be considered aged;

(c) The escalation exercise went further for older units. Pickering 4 and Bruce 1 and 2 were raised by 3% and Bruce 3 and 4 were raised by 2% and 1% respectively;

(d) There is no apparent reason in past years performance for this change in outlook; the DAFORS for Pickering Units 3 to 8 averaging 6.75% and for Bruce 6.32%. Further, the experience to April 30, 1988 remains favourable with an average for all units of 5.42%; and

(e) A pall of gloom has settled over Hydro's nuclear divisions when it was found in the fall of 1987 that the pressure tubes in Pickering Units 3 and 4 had higher levels of deuterium than expected. This has led Hydro to introduce an uncertainty allowance into its DAFORS forecasting. In AMPCO's opinion, this has been an overreaction to a surprise. Why not wait until the returns are in from the pressure tube inspections on Bruce Units 1 and 2 before drawing long-term conclusions.

3.6 FREE TRADE AND SECONDARY SALES

RECOMMENDATION: Hydro increase its efforts to export more to U.S. utilities when nuclear or hydraulic generation are on the margin.

REASONS AND COMMENTS:

(a) AMPCO accepts Hydro's testimony that the advent of free trade is unlikely to have significant direct effect on Hydro's secondary sales; and

(b) AMPCO accepts Hydro's forecasts of secondary sales volume and price. However, AMPCO is disappointed with the lack of progress made since HR16 in persuading neighbouring utilities to operate in a manner that will make it possible for them to take Hydro's nuclear and hydraulic surplus. On the other hand, AMPCO takes heart from Hydro's testimony that some initiatives were taken to store the surplus energy in Manitoba's reservoirs for return or later sale to the

U.S. AMPCO urges Hydro to keep pressing on this front with both Quebec and Manitoba.

3.7 U.S. STEEL CUMBERLAND MINE

RECOMMENDATION: Hydro cancel the U.S. Steel Cumberland Mine contract and write-off the advances and related expenses as Hydro proposes.

REASONS AND COMMENTS:

(a) AMPCO accepts Hydro's financial approach to writing off the U.S. Steel Cumberland Mine advances and the related expenses associated with the mine closure if that should happen. Spreading the effect of this cost over five years enhances rate stability which in AMPCO's view is and always has been a desirable element of electricity pricing;

(b) Hydro's testimony on the current capacity of coal suppliers indicates that the market can apparently meet sudden large increases in demand without undue stress as this years experience has shown. Another change from last year's situation is that the sulphur content of U.S. Steel Cumberland coal has risen significantly so it can no longer be considered good quality coal;

(c) In light of these developments, and with Hydro's expressed intention to put in place arrangements for a secure but flexible supply of coal, AMPCO agrees that it is time to cancel the U.S. Steel Cumberland Mine contract.

3.8 FUEL SUPPLY CONTRACTS - CHANGES SINCE HR16

AMPCO notes with satisfaction the change Hydro has made in its coal supply contracts from long-term, firm price agreements to more flexible shorter term, market oriented arrangements. It remains now for Hydro to do the same with its uranium contracts.

3.9 FUEL SUPPLY CONTRACTS - FUTURE ECONOMIC BENEFITS CONTRACTS

AMPCO is satisfied that, given the expressed intention of Hydro to continue to take 50 to 75% of its long-term uranium requirements from Elliot Lake, the $800M advance on these contracts will be fully recovered and the intended benefits from a secure Ontario based supply realized.

3.10 PETROSAR SETTLEMENT

AMPCO agrees with the financial treatment accorded the settlement for the same reasons given in respect of the write-off of the U.S. Steel Cumberland Mine advance.

CHAPTER 4 - OM&A GENERAL

4.1 MANAGEMENT OF OM&A COSTS

AMPCO is all in favour of the involvement of Hydro's consultant CRESAP and the expected productivity improvements stemming from CRESAP's work.

4.2 HYDRO'S BUSINESS PLANNING PROCESS

RECOMMENDATION: Hydro direct CRESAP to report on the appropriate level of effort required by the Branches for the Business Planning Process.

REASONS AND COMMENTS:

(a) Hydro has constructed a planning, budgeting and control process that may be encountering the law of diminishing returns as Hydro seeks to fine tune the process. It appears that a major effort is being expended by Hydro's larger branches in preparing their annual plans. AMPCO wonders if the whole process has become overly complicated and cumbersome.

4.3 THE FIVE PERCENT BRANCH RESOURCE VARIATIONS

RECOMMENDATION: Hydro not be required to file the five percent Branch resources variations in subsequent hearings unless requested to or ordered to do so by the Board.

REASONS AND COMMENTS:

(a) There is not much to be gained by applying a formal 5% variance test to every Branch because assessing the consequences is very judgmental and tends to make the more imaginative managers throw up "scare" figures when cuts are contemplated. To require a formal documented analysis of every Branch's plan suitable for public review is excessive and should be discontinued. Hydro's witness panel testified that the test is useful for internal review. Hydro should be required to continue the process for internal use.

4.4 TOTAL STAFF LEVELS

RECOMMENDATIONS:

1. Hydro extend CRESAP's mandate to examine how much of Hydro's work needs to be done by regular staff in order to achieve maximum cost effectiveness.

2. Hydro contract out more work to bring the present 89% done by regular staff closer to the permitted minimum of 83%.

3. Hydro should immediately begin to downsize the Design and Construction Branch regular staff to a level that reflects the imminent completion of Darlington design work and a staff of 100 to 150 to form the core of future CANDU design and build capability.

REASONS AND COMMENTS:

(a) 83% of Hydro's work is currently done by regular staff as agreed upon by Hydro and the OHEU after the Burkett Award. This was based mainly on senior management judgment as to the need for retaining flexibility in matching regular staff levels to changing work loads. AMPCO submits that a figure should be established on the basis of achieving maximum cost effectiveness. The 83% level will remain until the present contract with OHEU expires in 1990 but Hydro should know the optimum level before it begins to negotiate the renewal of the contract. In the meantime, there is no good reason why Hydro cannot contract out more work;

(b) Hydro's witness panel testified that there is some marginal loss in flexibility when contracting out is reduced and that this loss represents a hidden cost. Why not minimize the hidden cost by contracting out the maximum permitted under the 83% rule?

(c) Hydro's witness panel testified that increasing regular staff to take over work previously contracted out resulted in some short term training and staffing costs. In light of this, and the fact that Hydro's wages are well above the relevant community, AMPCO is convinced that contracting out more work will be cost effective;

(d) The Design and Development Division-Generation regular staff levels increase from 1354 in 1986 to 1380 in 1989 and up to 1804 in 1990 even though Darlington engineering work has been falling and is now almost finished. The Design and Development Division-Transmission is rising by 90 to 540 from 1986 to 1989 and staying virtually level thereafter;

(e) AMPCO submits that Hydro must immediately determine the future role of the Design and Construction Branch and at the same time begin downsizing the Design and Development Division-Generation because no matter what level of future capability is needed it cannot possibly require, in the foreseeable future, the 1,300 plus staff now held in that Division. CRESAP has also identified the Generation Division in the Design and Construction Branch as overstaffed;

(f) The rising pattern of OM&A work done by regular staff in Design and Construction for other Branches is not unconnected with the declining capital program. It is impossible not to infer that some of the work, if not all of it, would not have been done if the resources had not already been there to do it. If downsizing the Branch is not started immediately more and more of the time charged for Design and Construction staff will find its way into OM&A accounts and it will become a significant factor in the annual revenue requirement.

4.5 REDUCING THE WAGE GAP BETWEEN HYDRO AND COMPARABLE EMPLOYERS

RECOMMENDATION: Hydro continue to restrain wage increases to let the relevant communities move up and narrow the differential.

REASONS AND COMMENTS:

(a) There is no need to pay more than comparable employers to attract and hold the calibre of staff Hydro requires, particularly when these employers themselves are above the broad community level.

4.6 NEW PRODUCTIVITY TARGETS

RECOMMENDATION: Hydro develop and file in next years rate hearing a corporate wide labour productivity index based on person hours worked per unit of primary energy sold and covering sufficient history to enable an assessment of long-term trends.

REASONS AND COMMENTS:

(a) AMPCO submits that analyzing overall labour productivity trends gives very useful insights into an important area of Hydro's activities. Hydro has some indices in terms of GWH per regular employee that can give an approximation to the type of measures AMPCO seeks but these have a number of shortcomings:

   (i) changes in the amount of overtime worked are not covered;

   (ii) changes in the standard work week are not covered;

   (iii) temporary employees are not included; and

   (iv) OM&A work is not segregated from capital construction work;

(b) Hydro's witness panel testified that the use of person hours is a legitimate index and that Hydro could in future produce such an index; and

(c) The evidence shows a rising real OM&A cost per unit of customer delivered energy from $9.50/MWH in 1986 to $10.51/MWH in 1989. This unfavorable trend is surprising particularly since primary sales have been rising sharply during this period. It is this sort of evidence that prompts AMPCO to press for better corporate productivity measures.

4.7 EXPENDITURES ON PREVENTIVE MAINTENANCE

Hydro's expenditures on preventive maintenance in transmission and distribution are not appropriate. Hydro has not demonstrated a clear cut case for its claim that transmission performance has fallen below the desired level in recent years nor has it filed any solid evidence of deteriorating performance on its distribution system since the relevant outage reporting system for this facility is still under development.

Hydro plans to hire a total of 172 additional regular staff for preventive maintenance on its transmission and distribution systems in 1988 and 1989. It is not acceptable to add 172 staff to improve transmission and distribution reliability when the only performance standard specified for transmission is more than met and neither standard nor performance data for distribution were presented.

Hydro's hiring plan is also faulty because the Regions having the majority of the worst performing delivery points are receiving only 20% of the additional manpower.

4.8 NUCLEAR HIRING PROGRAM

AMPCO accepts that Hydro's nuclear operations function requires reinforcing in light of:

(i) falling plant capability factors due to lengthy planned outages; and

(ii) the growing backlog of temporary fixes and documentation.

AMPCO cannot comment on the size of the staff reinforcement (1,167). AMPCO is staggered by the $53M increase in the 1989 OM&A budget resulting from these hirings. AMPCO does not understand how new recruits can cost over $50,000 each, assuming a full year effect.

CHAPTER 5 - BORROWING PROGRAM

5.1 IS HYDRO'S DEBT MANAGEMENT PROGRAM APPROPRIATE

RECOMMENDATIONS:

1. Hydro examine alternative debt structure strategies as a basis for its debt management program.
2. Hydro consider relying on comparisons between current and historical data in determining targets for floating rate debt levels.

REASONS AND COMMENTS:

(a) A major feature of Hydro's debt management program is the 10% floating rate debt target. This target is, to a significant extent, based upon the interest rate forecast of the Economics and Load Forecasts Division, including the probability ranges that have been established around these forecasts. These probability ranges grossly understate the uncertainty level that should be associated with these forecasts. As a result, the use of these forecasts as the basis for a debt management strategy is highly risky;

(b) Hydro should examine the impact of alternative debt structure strategies by determining their impact over alternative interest rate environments. A general classification of appropriate targets under more generalized environmental circumstances is likely to be less risky than the current policy of depending upon unreliable short-term forecasts;

(c) Hydro's hedging strategy has resulted in a substantial accumulated loss since 1986. In light of this result, Hydro has shifted its approach to rely more heavily on historical hedging cost data. Hydro has apparently become less willing to rely on internal currency forecasts as the basis for its hedging strategy, a caution which AMPCO endorses; and

(d) The basic procedure of relying on comparisons between current and historical data in developing these targets is a sound one. Hydro should consider a similar procedure in determining targets for floating rate debt levels.

CHAPTER 6 - CAPITAL AND DEPRECIATION

6.1 FUEL CHANNEL REMOVAL, IRRADIATED FUEL DISPOSAL AND DECOMMISSIONING COSTS

There is an added cost in 1989 if the amortization period for fuel channel removal on Pickering Units 3 and 4 is shortened by the extent of the outage.

AMPCO sees no merit in requiring all unamortized costs to be recovered when the unit comes out of service as opposed to Hydro's proposed method of making the recovery when the unit comes into service about two years later. If it is considered a matter of principle to be applied to all future retubings the effect on today's costs for all units except Pickering 3 and 4 is so minor as to be academic. Why require Hydro to follow a principle which in the general case has no substantial long-term impact and why apply it to Pickering Units 3 and 4 if it is not material in the general case.

AMPCO also supports Hydro's policy of depreciating like assets with identical life expectancies as a class rather than as individual cases.

AMPCO's view is that rate predictability and stability are qualities to be prized and, therefore, it is preferable to smooth sudden unpredicted bumps in costs by amortizing them over a reasonable period. Nothing is to be gained either in principle or in practice if the 1989 annual revenue requirement is raised by requiring unamortized fuel channel removal costs to be recovered by the date the unit is removed from service rather than the date it is returned to service .

6.2 PLANS TO REDUCE ACID GAS EMISSIONS

AMPCO accepts Hydro's short term approach to meeting acid gas emission standards by burning coal with the lowest sulphur content possible.

CHAPTER 7 - NET INCOME

7.1 THE BASIS FOR HYDRO'S NET INCOME TARGETS

Hydro has interpreted the directive of the Treasurer of Ontario as requiring Hydro to follow more detailed financial requirements in determining its level of net income:

(a) Interest coverage ratio:

  (i) 1.05 on interest charged to operations;
  (ii) 1.50 on interest capitalized;

(b) a cash flow coverage ratio of no less than 1.0; and

(c) a debt ratio of no more than 85%.

Hydro's historical financial information illustrates that Hydro has operated with financial ratios far less favourable than at present without suffering any deterioration in its standing in capital markets.

Assuming that the ratios can be accepted as directional objectives, the current financial performance of Hydro substantially exceeds these requirements. This suggests that the original targets for net income in HR 17 provide an unnecessarily wide safety margin for the attainment of financial soundness. This overshooting has been further exaggerated by much stronger financial performance than originally projected.

7.2 THE APPROPRIATE LEVEL OF NET INCOME FOR 1989

RECOMMENDATION: The appropriate level of net income for 1989 is $630M.

REASONS AND COMMENTS:

(a) The financial projections in Hydro's initial submission indicate steadily strengthening performance measures over the coming three years. This improving financial picture is considerably stronger in the most recent updates provided by Hydro. The latest estimate for 1988 suggests that the 1988 and 1989 contributions for stabilization purposes appear to be unnecessarily large;

(b) Hydro's objective in the 1980's has been to have no increase in real rates. Hydro's new corporate strategy for the 1990's is to seek to maintain rate changes at or below the rate of inflation. AMPCO submits that it would be irresponsible for Hydro not to seize this opportunity to fight inflation by restricting its rate increase to the lowest level consistent with financial prudence. Failure to do so would be contrary to Hydro's objectives for the 1980's and Hydro's new strategy for the 1990's;

(c) Hydro has submitted that it requires a combined net income in 1988 and 1989 of $1,143M ($459 + $684) in an effort to smooth the rate increase in 1990. Hydro has now forecast that its 1988 net income will be $612M. The result is that Hydro now only needs a 1989 net income of $531M to have the same combined net income of $1,143M going into 1990; and

(d) A 1989 net income of $630M is 105% of Hydro's 1989 target net income. A 1989 net income of $630M would also give Hydro a combined 1988/89 net income of $1,242M ($612 + $630) which would take Hydro into 1990 in a stronger position than Hydro said it required. A 1989 net income of $630M is also more than adequate to ensure the continuation of Hydro's strong financial position and satisfy all of Hydro's financial objectives in 1989.

CHAPTER 8 - ENERGY MANAGEMENT

8.1 IMPACT OF MARKETING ACTIVITIES ON DEMAND

RECOMMENDATION: Hydro should be required to demonstrate that the impacts of proposed energy management programs are well understood and that the decision criteria are consistent with public policy objectives before Hydro allocates any more money to energy management.

REASONS AND COMMENTS:

(a) Hydro, operating as a monopoly and carrying out stated government policy, must apply decision criteria that are consistent with public policy;

(b) It is essential that Hydro be able to measure the expected benefits and costs of energy management programs in order to establish the desirability of a particular measure and also to determine priorities among various measures. It is apparent that Hydro could not and has not done this in the past. In fact, Hydro still cannot measure the expected benefits and costs of such programs. Furthermore, Hydro does not seem to have any regard for the numbers that are readily available to evaluate its energy management programs; and

(c) The objective in HR 17 was to concentrate on the impact of energy-management options. Unfortunately, the estimated impacts provided during HR 17 are still far from convincing.

8.2 DEMAND MANAGEMENT IN THE LONGER-TERM

If lower-cost options for demand management do exist, they should be pursued. The attention and resources directed to these policies should be considered in the framework of their overall significance to Ontario's electricity demand/supply balance. Even if Hydro's objective of 3000 MW by the year 2000 is realized, this would provide at best a two year delay in the need to add capacity. Given the lead time for bringing on significant new capacity the Board and Hydro should be wary of being lulled into a false sense of security from energy management.

8.3 HYDRO'S PLANS FOR THE SALE OF TRITIUM

RECOMMENDATION: Hydro begin immediately to make all necessary arrangements for the sale of tritium including obtaining the necessary regulatory approvals.

REASONS AND COMMENTS:

(a) The potential additional long-term revenues from the sale of tritium are in excess of $25M per year. Virtually all of this revenue is profit since tritium is extracted from heavy water in any event to facilitate safe and efficient operation of nuclear plants.

CHAPTER 9 - RATES

9.1 AREAS OF CONSENSUS ON THE WHITE PAPER

RECOMMENDATION: Hydro proceed to implement the White Paper On Ending The Rate Moratorium as proposed.

REASONS AND COMMENTS:

(a) While Ms. Chown and Dr. Wilson had their differences with respect to the White Paper they both agreed with Hydro about a number of important principles. Ms. Chown agreed with time-of-use rates; the daily peak for weekdays that was proposed; that the 1989 rate differential should be adopted; and, that the proposed 1989 capacity energy split of 45/55 and target split of 42/48 should be adopted;

(b) Dr. Wilson agreed with the White Paper's time-of-use rates and their proposed level; that more emphasis should be placed on energy than capacity; the rate strategy; and, that it is important to achieve equity;

(c) Ms. Chown's main objection to the White Paper is that it is far too rigid. She testified that it eliminates the ability to refine rates as we go along;

(d) The White Paper says that: "The parties agree to review the terms of this Memorandum should conditions warrant". Therefore, the White Paper is not rigid but is intended to indicate that it is open to review, if necessary. This interpretation was buttressed by Hydro's witness panel which suggested that progress under the new rate structure would be reviewed annually with the Ontario Energy Board with a major review in approximately four years. Mr. Franklin, Hydro's President and Acting Chairman, was emphatic in his testimony that the White Paper would not fetter the discretion of Hydro should conditions warrant;

(e) It is AMPCO's view that the White Paper allows changes necessary to ensure that costs are tracked to a reasonable degree. However, AMPCO is concerned about and opposed to continual fine tuning or refinement in order to strive for an elusive goal of rate making perfection. So long as the system performs more or less as contemplated it should not be fiddled with recognizing, nonetheless, that meaningful changes can be made if conditions warrant;

(f) The introduction of on-going fine tuning or refinement would undermine the stability of the proposed rate structure. Without the intention to keep the proposed rate structure in place as contemplated, many municipal utilities and direct customers would be apprehensive about a hidden agenda motivating fine tuning and refinement. The White Paper is a big step in resolving acrimonious differences over rate reform. The fact that the proposal is for a lengthy period subject to its caveat is a very important factor in generating its widespread acceptance;

(g) The evidence contains an impact analysis of a 42/58 demand/energy split for 1989 as opposed to immediate introduction of the 45/55 demand/energy split in 1989. Foregoing the phase-in period would mean that in 1989 six direct customers would experience an increase in their electricity bills of between 7.6% and 8% whereas under the phased-in approach no direct customer would experience an increase of more than 7.5% in 1989;

(h) Dr. Wilson proposes the Peak Credit Method of the Combustion Turbine Approach to allocating capital costs to energy. In his evidence, Dr. Wilson quotes the Texas Public Utility Commission in response to a proposal by its staff to adopt a marginal cost allocation method of determining marginal demand costs. The proposal was rejected by the TPUC. Dr. Wilson's approach should be rejected for the reasons referred to by the TPUC and for other reasons arising out of his testimony:

(1) Dr. Wilson's approach presumes that the need for additional demand will be of very short duration and hence the lowest cost means of responding is with additional combustion turbines. However, he acknowledged that he did not know how much capacity Hydro has or the form of combustion turbines. Dr. Wilson was not able to indicate whether the need for additional demand on Hydro's system falls within the category of a very short duration;

(2) In terms of methodologies that recognize that capital costs can be energy related, Dr. Wilson indicates that the Combustion Turbine Approach "is the maximum". AMPCO's position is that accepting the "maximum" approach would have a disastrous effect on the objective of customer acceptability;

(3) It is impractical to run combustion turbine plants for more than short periods due to maintenance problems and high fuel costs. An impractical solution should not be applied even if only at the methodology level; and

(4) Dr. Wilson's treatment of OM&A as being two-third's energy related is highly questionable.

ONTARIO ENERGY BOARD

H.R. 17

IN THE MATTER OF the Ontario Energy
Board Act, R.S. O. 1980, Chapter 332;

AND IN THE MATTER OF a reference to
the Ontario Energy Board by the
Minister of Energy in respect of
the proposed bulk power rates of
charges of Ontario Hydro for 1989.

EXECUTIVE SUMMARY OF NEPEAN HYDRO'S ARGUMENT

Nepean Hydro appears to be the only effective municipal utility intervenor.

The evidence led by the Commission and outlined in its submission with respect is substantially made out.

The proposed demand energy split alteration and the time of use rates will result in an increase in their cost of power.

Placing more emphasis on energy and less on demand, utilities with a high load factor in the northern climate will likely experience an increase in their cost of power.

The test of time of use rates is totally inconclusive. Further time is required in order to properly assess the test. Figures submitted indicate no benefit or ability to manage load where the peak exists between 7 in the morning and 11 at night.

The Board's own witness was unable to point to any experience where the adoption of time of use rates in the United States has been of any significance.

Nepean Hydro's 1982 submission indicated rates should be subjected to a test. The test submitted has not been substantial, is not complete and in itself is inconclusive. The gist of our 1982 letter was cost of supplying electric heat under time of use rates would rise. We submitted that Ontario Hydro should conduct a test to determine whether this would be the case. The preliminary results indicate that whenever 16 hour time of use rates are applied, the cost of power has risen.

The 66% acceptance: This figure is of no statisical validity. If it was related to a time of use between 7 a.m. and 11 p.m. with a 6 month winter peak, exclusively it might have some significance. "What does the 66% represent?". We suggest that 66% of those customers subjected to a 16 hour time of use rate schedule may not have been pleased.

Proposed demand energy split and time of use rates it is said will better reflect power at cost. We have always paid for power at cost.

Nepean Hydro seriously questions whether tracking costs in this manner would be equitable to customers who live in the colder areas. We do not charge customers more for electricity because they live a distance from generating facilities. The cost of transmission facilities is just as certainly a variable whose cost could also be tracked.

The only legitimate reason for tracking and passing on certain elements of cost is to reduce the overall cost of power. There is no evidence the proposed rate structure will result in a reduction in the overall cost of power.

Nepean's said time of use rates are of no use in load management if they can not be passed on to the retail customer. It will not be economical for either the utility or the retail customer to pay for installation metering.

Nepean Hydro says time of use rates at the wholesale level is not an equitable or reasonable method of sending a signal to retail customers. When the time of use periods both winter and summer and time of day are so expansive there is no ability for the customer to change his habits. It will be virtually impossible to get the retail customer to change their habits without some tangible benefit to them.

The proposals submitted will result in two classes of customers, that is those that have adopted time of use rates and those who have opted out.

Many members of MEA who want to opt out thought they would continue to be billed in the previous way which is not the case. Utilities that opt out will pick up that part of the cost of power not covered by those that accept the time of use rates. This would not be a proper allocation of the cost of power.

What is the purpose of the exercise? It is purely for the purpose of attempting to better utilize the capacity of the existing system. This massive undertaking causing major disruption in the relationship between some 320 utilities and their customers will not produce a change in attitude or a change in consumption.

Nepean Hydro says Ontario Hydro has not made out any need for the change in demand energy split nor have they been able to demonstrate any benefit that will come from the time of use rates other that to shift a greater burden of the cost of power on utilities in the north which have been prudent enough to develop a high load factor. The Board's direction to study time of use rates has been accepted by Ontario Hydro as an order to implement them. They should report that there is no significant benefit from adopting them.

The proposals will result in an unwarranted and unfair increase in the cost of power to a substantial number of customers.

Nepean Hydro believes that rather than implement time-of-use at the wholesale level it would be more cost effective and equitable to have municipal utilities undertake programs for time-of-use for retail customers able to resond. Furthermore, more effort should be made to develop a generating system which can track demand at a cost that does not vary significantly.

Nepean submits Ontario Hydro be directed by the Board to produce a rate schedule which will continue the 50-50 demand energy split and continue to bill in the previous manner.

Nepean Hydro submits that the Board should order its costs of this intervention be assessed and paid by Ontario Hydro and adopts the argument of Energy Probe and AMPCO as to costs.

All of which is respectfully submitted.

Delivered at Nepean, this 18th day of July, 1988.

of counsel for Nepean Hydro

ONTARIO ENERGY BOARD

H.R. 17

IN THE MATTER OF the Ontario Energy Board Act, R.S.O. 1980, Chapter 332;

AND IN THE MATTER OF a reference to the Ontario Energy Board by the Minister of Energy in respect of the proposed bulk power rates or charges of Ontario Hydro for 1989.

FINAL ARGUMENT OF THE CONSUMERS ASSOCIATION OF CANADA, ONTARIO CHAPTER

EXECUTIVE SUMMARY

July 21, 1988

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INTRODUCTION

1. The Ontario Chapter of the Consumers Association of Canada has intervened in these proceedings before the Board in order to review the proposal by Hydro to change the structure and level of its rates for provision of electricity in bulk to municipal utilities and direct customers, effective January 1, 1989. In particular, CAC Ontario has been concerned with the impact of Hydro's proposals on individual residential consumers.

2. While it supports many of the individual programs and initiatives presented by Hydro in evidence, CAC Ontario considers that Hydro's proposals will impose an undue and disproportionate burden on residential consumers, for the following reasons:

- Hydro has failed to control growth in its expenditures or to improve productivity, in line with other comparable utilities, resulting in an excessive revenue requirement proposed for 1989.
- Hydro lacks a coherent net income policy, and its total budgeted net income for 1989 unnecessarily inflates the revenue requirement and resulting rate increase proposed for 1989.
- Hydro's proposals for rate design in 1989 and subsequent years do not adequately redress the

historical imbalance in its demand and energy rates, which unfairly favours high-load industrial customers at the expense of residential consumers, and prevents the efficient planning and use of the electric power system in Ontario.

1 FORECAST OF KEY ECONOMIC VARIABLES

1. There appear to be few significant differences between the forecasts of key economic variables by Hydro and those presented by Mr. de Bever which suggests there is reason for considerable confidence in Hydro's forecasts.

2. In arriving at its final target net income in the original rate proposal, Hydro has made allowance for a number of "uncertainties". One uncertainty which Hydro has identified concerns exchange rates. Given the level of confidence in Hydro's forecast, we believe an allowance for "uncertainty" in projected exchange rates is unwarranted, and should be rejected. CAC Ontario recommends a reduction in the revenue requirement for 1989, to permit consumers to benefit fully from the exchange rate changes anticipated.

2 FUEL, POWER PURCHASES AND SECONDARY SALES

1. Impact of New Rate Structure on the Short-Term Load Forecast

1. Generally, the closer cost tracking associated with time-of-use rates and the more appropriate capacity/energy split should result in more efficient use of power and, possibly, in an overall reduction in demand during peak periods.

2. The impact of the proposed time-of-use rate structure is minimized by the optional feature for municipalities, assuming that those most affected by the proposal will choose to opt out. However, it is anticipated that fewer and fewer municipalities will remain opted out, with each year of experience with time of use rates. This issue should be reconsidered as Hydro gains experience with the new rate structure.

2. Secondary Sales

3. Hydro's actual secondary sales for the first quarter of 1988 are 1,494 Gwh, yielding a net revenue of $19.1 million which constitutes almost 50% of Hydro's forecast net revenue from secondary sales for the whole of 1988. If Hydro continues to be able to take advantage of a supply/demand imbalance to raise its prices for the sale of electricity it would result in a reduced revenue requirement in 1989 due to increased revenue from secondary sales. CAC Ontario believes that Hydro's net

revenue projections on forecast secondary sales in 1989 should be increased to $80 million.

4. CAC Ontario believes that the pricing formula for electricity exports should recover all of Hydro's own costs. To the extent that exports of electricity cause Hydro to burn more coal, and a higher proportion of low sulphur coal in order to stay within regulatory limits for acid gas emissions, the higher cost of this low sulphur coal (rather than Hydro's average coal acquisition cost) should be used to calculate an appropriate export price. In failing to take these incremental fuel costs into account, Hydro overstates the benefit and understates the cost of making secondary sales.

5. CAC Ontario is concerned that Hydro's current pricing formula does not accurately assess the environmental costs of secondary sales. In particular, we are concerned about the adequacy of the $.40 per Mwh social cost adder. Since the National Energy Board last examined this issue in 1981, there has been growing public concern and awareness about acid rain, and a considerable amount of research has been done which suggests that the environmental and economic costs of acid rain are much greater than previously thought.

3. Jurisdiction over Social Cost Adder

6. The argument that the "social cost adder" is a matter solely within the jurisdiction of the National Energy Board is

not an argument that should be embraced by this Board or by Hydro. CAC Ontario urges the Board to pursue its concerns about the pricing and costing of secondary sales, and suggests that the Board recommend that this issue be re-examined more thoroughly in H.R.18.

4. Co-Generation and Parallel Generation

7. CAC Ontario is encouraged by Hydro's recognition that parallel generation has an important role to play in meeting Ontario's energy needs. Parallel generation offers several advantages over large scale system generation facilities.

8. Hydro's forecast of 1,000 Mw of parallel generation by the year 2000 seems low, given the potential for parallel generation within Ontario. Over 150 Mw are presently in service or committed, and an additional 32 projects totalling 534 Mw have already been proposed.

9. CAC Ontario urges Hydro and the Board to pursue parallel generation as an alternative option for energy supply in Ontario. CAC Ontario sees merit in the position advanced by the Waterpower Association of Ontario, that the ceiling buy-back rate for parallel generation should be raised from the present level of 85% of Hydro's system average cost of power, as an incentive to more rapid development of these resources. In addition, CAC Ontario sees merit in the position advanced by counsel to IPPSO, that, if there are measurable variations in

Hydro's cost of power supply in different parts of Ontario, a regional buy-back rate system should be examined.

10. Hydro has refused to produce the information necessary to assess the cost-effectiveness of its low-interest loan incentive program for co-generation, on grounds of confidentiality. CAC Ontario is concerned that these low-interest loans are made available at an interest rate based, in part, upon the internal rate of return of the co-generator. Internal rates of return, particularly in large corporate conglomerates, may be an artificial criteria for eligibility for this incentive program. If the Board is not to be provided with the means of assessing this issue, then it seems appropriate that an external consultant such as Cresap should examine it.

3 OPERATIONS, MAINTENANCE AND ADMINISTRATION

1. Staffing

1. CAC Ontario supports Hydro's philosophy of "power at cost". However, if consumers are to benefit from Hydro's ability to sell power at cost, then its costs must be kept under strict control. The evidence presented at H.R. 17 concerning Hydro's salary and wage levels, Hydro's productivity performance, and the Cresap Review suggest that Hydro is not operating as efficiently as possible. Hydro's attempts to control costs have been inadequate.

2. The Chairman's response to the Cresap review includes the announcement of a hiring freeze, to take effect on May 31, 1988. This is a step in the right direction, but CAC Ontario is concerned that it does not go far enough and will not be effective. There are three considerations which affect the impact of the Cresap studies and the Chairman's response on Hydro's staffing levels:

(a) the number of staff made available for redeployment, and the extent to which they can fill vacancies caused by attrition;

(b) the effect of the freeze on previous budget staff increases; and

(c) the effect of the exemption of Production Branch hiring programs.

3. At the end of May, 1988 when the freeze took effect, Hydro had a regular staff complement of 24,552. Hydro's 1989 rate submission was based upon a projected increase to 25,601. Thus, the freeze potentially affects a total budget increase of 1049 staff positions. However, the specific nuclear and other Production Branch hiring programs, which are expressly exempted from the freeze, call for an additional 1133 staff during 1988 and 1989.

4. The net effect of the Production Branch hiring programs almost exactly cancels out the effect of the freeze on

previous budget increases. Hydro's final update of the financial forecast appears to have included an increase in the revenue requirement to cover the hiring programs, without an offsetting decrease to reflect the elimination of previously budgeted staff increases.

5. Testimony at the hearing raises doubts about the commitment of Hydro's senior management to the freeze, and to the principles which emerge from the Cresap review.

6. Despite Cresap's conclusion that over 2,000 Hydro employees are underutilized and the acknowledgement by the Chairman that the Ontario economy is expected to be very robust in the short term, Hydro is not prepared to abandon its policy of continuity of employment. CAC Ontario is concerned that a significant number of Hydro's employees will remain underutilized either because they will be unsuitable for the positions to be filled in Production Branch or because the attrition rate will not be high enough to absorb them.

7. CAC Ontario recommends:

(a) that Hydro reconsider its continuity of employment policy in light of the prevailing favourable economic conditions;

(b) that Hydro's hiring freeze extend to all new hirings, without exception, until the number of underutilized employees identified in the Cresap review is significantly reduced; and

(c) that Hydro introduce or extend programs for early retirement and retraining, in order to facilitate the reduction and redeployment of staff.

8. CAC Ontario believes that Hydro has understated the savings which will result from the Cresap review and the Chairman's staffing freeze by a significant amount.

2. Salary and Wage Levels

9. Comparative measures show Hydro's salary and wage levels for regular staff exceed community averages. CAC Ontario recognizes Hydro's objective of attracting and retaining highly qualified staff in key positions, but does not accept that this objective justifies the extent and level of the differentials which presently exist.

10. Although Hydro has a stated objective of "narrowing the salary gap between itself and the reference community", little is being done to realize this objective. Between 1986 and 1987 the salary gap actually widened for more than 90% of Hydro's engineering staff. In 1988, Hydro's 3.9% salary increase for its engineers provide an average reduction in the differential of less than 0.5%.

11. The levels of compensation offered by Hydro are also high in relation to those offered by other Canadian utilities and this differential has actually been increasing since 1984, during a period in which Hydro claims to have been exercising unusual budgetary restraint.

12. Hydro has no way of knowing whether its policy of paying higher salaries is successful in attracting high-quality university graduates or whether the present differentials are necessary in order to retain its existing engineering staff.

13. CAC Ontario recommends that Hydro establish a timetable for reducing its salary levels toward the reference community averages.

3. Productivity

14. Hydro's high compensation levels might be justified if they resulted in higher productivity than in comparable utilities. However, productivity measures indicate that Hydro's labour productivity (in Gwh/regular employee) has been lower than the CEA Composite, while its system unit costs, capital unit costs, O&M unit costs and fuel unit costs have been higher.

15. Hydro was unable to explain the recent trends showing a decline in productivity relative to the CEA composite. CAC Ontario recognizes that Hydro's capital costs have been high in recent years because of its commitment to nuclear generation; however, this does not explain why Hydro's fossil generation unit costs are higher then the CEA Composite, or why its transmission and distribution unit costs are higher.

16. The Cresap overview study results and the productivity comparisons with the CEA composite of Canadian utilities, confirm Hydro's lack of success in controlling expenditures and

enhancing productivity. CAC Ontario supports the Chairman's decision to pursue the Cresap in depth reviews of selected departments, and recommends that the results of these studies be the focus of inquiries during H.R.18.

4 CAPITAL PROGRAM AND DEPRECIATION

1. Pressure Tube Service Life Estimates

1. CAC Ontario submits that the evidence falls short of establishing the need to revise Hydro's service life estimates for nuclear pressure tubes downward.

2. Accounting for Decommissioning Costs

2. Decommissioning costs should in fairness, be borne by those customers who benefit during the life of the plant. Given the high level of these costs and Hydro's growing reliance on nuclear generation, CAC Ontario recommends that, at a minimum, Hydro's decommissioning costs should be separately reported on its financial statements, and rejects the suggestion by Hydro that they are "not sufficiently material".

3. In light of the high degree of uncertainty concerning the level of nuclear decommissioning costs, CAC Ontario further recommends that Hydro and the Board give consideration to the alternatives for an internal or external fund or reserve to cover these costs.

3. Acid Gas Emission Reduction

4. CAC Ontario supports an accelerated investment in acid gas emission reduction technologies, in recognition of the social cost of existing coal fired generation.

5 FINANCIAL POLICY: FUEL CONTRACT CANCELLATION

1. CAC Ontario supports in principle the stated intention of Hydro to cancel fuel supply contracts, where the penalty for cancellation is outweighed by the benefits to be gained by entering into new supply contracts on more advantageous terms. In particular, Hydro's decision to write off the Cumberland Mine advance in connection with the cancellation of its contract with USX appears justified.

2. We did not find the arguments to write off the $85 million cost of cancelling the contract during the life of the contract compelling. These costs are being incurred to create opportunities to negotiate fuel supply contracts which should benefit future consumers. We consider it appropriate that the future consumers contribute to the cost of cancelling the contract.

6 ENERGY MANAGEMENT

1. General

1. CAC Ontario supports and applauds Hydro's increased emphasis on demand management. We find ourselves in complete

agreement with the program objectives of the Energy Management Branch, as set out as follows:

- reduced rate increase requirements;
- increased flexibility for the customer and the corporation;
- more efficient system utilization; and
- meeting Hydro's regulatory responsibilities in an effective and efficient manner.

2. It remains a concern, however, whether Hydro is in fact achieving these objectives in the most cost effective manner. Our concerns about Energy Management's 66 per cent increase in its OM&A budget for 1989 over 1988 are compounded by Hydro's limited ability to forecast and track the impact of its energy management programs. Hydro's estimates of the load impact of individual programs appear to involve a large element of speculation.

3. CAC Ontario is concerned that even though Hydro's energy management programs might reduce the electricity bills of particular target customer groups the cost of these programs will end up increasing the total price of electricity for Hydro's customers as a whole. CAC Ontario recommends that:

(a) Hydro carefully monitor the actual load impact of all energy management programs, in order to improve its forecasting methods and test the effectiveness of these programs; and

(b) that Hydro take full account of the costs of these programs, and all associated system cost increases, in assessing the cost effectiveness of individual energy management programs.

CAC Ontario recommends that a review of these issues be undertaken in the course of H.R.18.

2. Treatment of Costs for Rate Making Purposes

4. CAC Ontario sees no reason to treat the costs of energy management programs in a manner different from other OM&A costs, for rate-making purposes. If they are common function costs, the issues are:

(a) whether they are capacity or energy related; and

(b) what time period they are best allocated to.

7 NET INCOME

1. Financial Performance

1. Hydro's net income policy is based upon an assessment of its financial performance, based upon a number of indicators, including the level and quality of interest coverage, the debt ratio, and the cash flow coverage ratio. Capital availability and the statutory requirement to provide for the retirement of debt must of course be taken into account in setting net income, but in Hydro's proposal for 1989 neither of these factors are governing constraints.

2. The financial indicators which underlie Hydro's Net Income Policy are based upon criteria which are normally used to assess investor owned utilities and other private corporations. CAC Ontario does not accept that these indicators, which are normally used to ensure the ability of private corporations to borrow at reasonable interest rates, are applicable to a Crown corporation such as Hydro, which enjoys a provincial loan guarantee.

2. Net Income for 1989

3. The statutory debt retirement appropriation for 1989 is $367 million, and this level of net income would be obtained approximately with no rate increase at all in 1989.

4. The proposed 5.5% increase provides net income which is 123% of the target net income of approximately $600 million. No justification has been provided for planning to exceed the target net income. Even the target net income level is in excess of which is required. As Hydro's Business Plan points out:

> "Over the past few years, net income targets have not been achieved as shown in Figure 4.12. Despite the decisions in these years not to set rates at a level requisite to meet the income target, Ontario Hydro securities continue to enjoy an enviable reputation."

5. CAC Ontario believes that the opportunity exists in 1989 for no rate increase to be implemented. The net income level recovered on this basis will be approximately equal to the

statutory debt appropriation requirement and will produce interest coverage and debt ratios sufficient to maintain Ontario Hydro's financial soundness in line with the average since 1983.

6. CAC Ontario recognizes, however, that Hydro is concerned with rate-smoothing in anticipation of substantial increases forecast for 1990. To the extent that this projected increase in rates for 1990 is incurred to satisfy Hydro's existing net income policy, CAC Ontario believes that rate smoothing can be effected by deferring the attempt to achieve the target net income levels under that policy for 1990 and subsequent years.

8 COST ALLOCATION

1. Cost Tracking and the Fairness Objective

1. Hydro accepts that the objective of fairness in rate design is vitally affected by the cost allocation process and methodology. Hydro has stated that one of its objectives in rate design is that:

> "rates should be fair - broadly defined as those which track costs and assign equal treatment to equals based on cost causality, to the extent feasible and practical."

2. Customer Acceptability: Hydro's Approach to Cost Allocation

2. Hydro acknowledges that it has not approached cost allocation in 1989 in a strictly theoretical or scientific

manner. Hydro's conclusions on the capacity/energy split and other cost allocation issues arise out of a Memorandum of Understanding with two of its major customer groups, as represented by the MEA and AMPCO, and are defended on the basis of "pragmatism" and customer acceptance, rather than on any technical or fairness criteria.

3. CAC Ontario does not accept Hydro's concept of public acceptability. Public acceptance must mean more than acceptance by MEA and AMPCO. The interests of individual consumers in rural areas were not represented at all in Hydro's negotiations, while individual consumers in municipal areas were represented only remotely and indirectly through the MEA.

4. Hydro's proposal calls for a shift of the allocation of common function costs from a 50/50 to a 45/55 capacity/energy split in 1989 with a gradual increase to a 42/58 split in 1992. The 42/58 split is to be frozen for ten years. CAC Ontario supports the proposal to recover a greater proportion of common costs from the energy rate. Shifting some of the cost burden towards high load factor customers will tend to favour residential and other relatively low load factor customers. However, the magnitude of the proposed shift is inadequate and the time from for its implementation is unduly extended.

5. Hydro's approach does not rely upon a judgement about which is the most appropriate or accurate method of allocating common plant costs between capacity and energy. It is an after-

the-fact rationalization of the result which emerged in negotiations with MEA and AMPCO.

6. Hydro's 42/58 target capacity/energy split would attribute only 37.5 per cent of its plant costs to the energy rate. The proper proportion should be at least 60 per cent, which would translate to a target capacity/energy split of about 30/70.

7. CAC Ontario concludes that the appropriate capacity/energy split for Hydro lies in the range of 30/70 to 35/65. Hydro's move towards a 42/58 split, while directionally right, falls far short of the optimal position.

9 RATE DESIGN

1. Time-of-Use Rates

1. Based upon the expert evidence called at the hearing, CAC Ontario is persuaded that there are legitimate economic reasons for the introduction of time-of-use rates to Hydro's customers at this time. Moreover, it appears that Hydro's choice of seasonal and daily periods for rate-setting purposes, and its proposed time-of-use energy rate variations are reasonable and supported by the available cost date, at least as a conservative first step in the introduction of time-of-use rates for electricity at the wholesale level.

2. The need for a separate demand charge is reduced with the introduction of time-of-use rates, and decreases progressively as the rate system is improved in terms of effective cost-tracking. This should be taken into account by Hydro and the Board in reconsideration of its target capacity/energy split.

3. Given the likelihood of progressive opting-in to the time-of-use structure and the fact that rates for those opting out of the system will be based upon the time-of-use cost allocation scheme, CAC Ontario believes that the optional feature of the time-of-use proposal as it applies to municipalities is an acceptable compromise to secure customer acceptance of the proposal in the short term.

2. Special Condition Rates

4. CAC Ontario supports the arguments advanced by Ms. Chown and a number of intervenors through their cross-examination that Hydro's special condition rates are discriminatory and should be phased out. With specific reference to the mechanical pulping rate, CAC Ontario questions whether Ontario Hydro should be offering special rates to certain industrial customers in order to serve economic development goals. We are also concerned that this special rate may have a negative impact on Ontario Hydro's attempts to encourage parallel generation.

3. Implementation after 1989

5. The differential customer impacts of introducing Hydro's proposed capacity/energy split and time-of-use structure, together, are not unduly large in 1989, and the differential impacts of full implementation of Hydro's target proposals in 1990 are similarly modest. The predominant factor in rate increases for all customers is Hydro's increased revenue requirement, which we have previously argued is excessive. CAC Ontario recommends that Hydro's target 42/58 capacity/energy split and target seasonal and daily time-of-use differentials should be implemented fully by 1990. We recommend further that both targets should be reviewed by the Board in connection with Hydro's 1991 rate submission with a view to a further reduction in plant costs allocated to capacity.

6. Hydro has introduced, and seeks the support of the Board for, its proposals on the basis that they constitute a package, delicately pieced together through negotiation, and presented on a "go/no go" basis. Implicit in this position is the threat, which concerns CAC Ontario and should also trouble the Board, that this is a "take it or leave it" proposal, in which we can either accept this package of reforms, in its entirety, or settle for no reform at all.

7. CAC Ontario accepts and endorses both the form and direction of Hydro's principal reform proposals. As a matter of law, Hydro can not delegate to the Ad-Hoc Committee its

statutory responsibility for fixing wholesale electricity rates for Ontario. Similarly, Hydro can not lawfully fetter its discretion to review the proposed rate structure in the years following 1989.

8. The Board should not be deterred in any manner from pursuing its own statutory mandate to review Hydro's proposals on their merits. The Board should make its own determination of whether the proposal satisfies the public interest, and should not hesitate to criticize those aspects of the proposal, or the process which gave rise to it, which the Board may not accept.

9. Similarly, Hydro should be free, and should appear to be free, to act upon the Boards recommendations, even if they involve modifications to the existing proposal which MEA or AMPCO might not agree to. If Hydro is unable to implement needed reforms to its own rates without the security of approval from its major customer groups, it may be necessary to explore changes to the rate-setting powers Hydro now enjoys under The Power Corporations Act.

10 SUMMARY OF CHANGES TO HYDRO'S PROPOSED RATE INCREASE

1. CAC Ontario believes that Hydro's proposed 5.5% basic rate increase is excessive even on Hydro's own evidence. Accepting all of the assumptions underlying Hydro's original proposals, as amended by Hydro's own updated estimates, its original target net income of $684 million can now be achieved with a 4.6% rate increase.

2. In addition, CAC Ontario believes that Hydro's updated estimates overstate the revenue requirement for at least the following reasons:

ITEM	NET REVENUE IMPACT $M
1. Underestimate of benefits of improved exchange rate	indeterminable
2. Underestimate of revenue from secondary sales	18.0
3. Underestimate of Cresap impact	indeterminable

3. Finally, CAC Ontario believes that revision of Hydro's net income policy to recover only its statutory debt requirements permits no rate increases for 1989.

11 COSTS

19. The Board should make an award of costs in favour of CAC Ontario, which specifically addresses the matters set out below:

(a) In the circumstances of the HR-17 hearing, the Board should find that counsel time for preparation prior to the hearing and for participation in the hearing itself should be rewarded equally at the rates normally attributed to hearing time;

(b) The fees and expenses of CAC Ontario's witness should be dealt with separately in the Board's decision if anything less than 100% of reasonably incurred costs are being considered by the Board;

(c) In light of the fact that CAC Ontario has participated only in those portions of the hearing in which it thought its contribution would be helpful, the Board should award CAC Ontario its full costs in this proceeding.

THE WHOLE RESPECTFULLY SUBMITTED ON BEHALF OF CAC Ontario

by its counsel,
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Per: Michael M. Peterson
Michael M. Peterson

July 21, 1988

1325 Applewood Rd.,
Mississauga, Ont.
L5E 2L9.
July 11, 1988.

Ontario Energy Board,
26th Floor, 2300 Yonge St.,
P. O. Box 2319,
Toronto, Ont.
M4P 1E4

Gentlemen:

The Ontario Energy Board made a decision that intervenors would provide written, not oral, argument. I protest that decision most strongly.

A Hearing, or an Assembly of Parliament, provides an opportunity to express concepts for the betterment of this nation or province.

In Ottawa, we had the debate on free trade reduced to one day. In Toronto, we had oral argument quenched.

I, as a senior citizen, a knowledgeable individual in the combustion field, having proven that there is a "better way" in energy efficiency, especially when one considers the environment and the smog that we have suffered these last few days, will not agree at any attempt to by-passing the democratic system.

Oral argument was the last opportunity for me to challenge my fellow intervenors.

Thank you for the opportunity to state my views.

Yours sincerely,

Arnold M. Earl

AME/e

F/72

ONTARIO HYDRO'S 1989 RATE PROPOSAL: A STUDY IN ASYMMETRY

Energy Probe's Final Argument to the Ontario Energy Board

H.R. 17

EXECUTIVE SUMMARY

ECONOMICS - Forecasts of Key Economic Variables

In most respects, the economic forecasts presented by Ontario Hydro, and Board Staff witness, Dr. DeBever, are extremely similar. Energy Probe submits that there is no issue of concern with the absolute levels of the forecasts. However, all the witnesses agree that the forecasts this year are subject to a high degree of uncertainty owing to a number of factors. In other words, while the forecasts may be similar, the environment for the forecasts is extremely volatile.

Issues contributing to increased uncertainty include: a potential flux in the interest rate, the impacts of a new budget, and the Free Trade Agreement.

The Impact of the Free Trade Agreement (Short-Term)

Ontario Hydro has assumed that the Free Trade Agreement will have virtually no impact on 1989 rates. However, when Dr. DeBever was asked about the impact of the Agreement in 1989, he noted a number of risks, the most apparent being the impact on interests rates.

Energy Probe takes the view that any uncertainty due to the timing or implementation of the Free Trade Agreement should be allowed for in net income.

The Impact of the Free Trade Agreement (Long-Term)

Hydro does not expect the Free Trade Agreement to affect Ontario domestic electricity pricing policies but agreed there remains some uncertainty as to the agreement.

Hydro agreed that if it exported electricity on the same contractual terms as it sold it within the province, but with different prices, a problem may arise under the Free Trade Agreement, unless the price differential was based on technical grounds, for example, different transmission requirements or different sources of generation used. Where the contract terms are the same, there would be an expectation under the free trade agreement that the pricing would be the same.

After agreeing that there was a social cost adder on export sales and not on domestic sales, Hydro agreed that export sales and domestic sales are treated differently.

Energy Probe submits that the existing export pricing policy may cause a dilemma, that is, the pricing policy may be viewed as discriminatory and in contravention of the spirit of the Free Trade Agreement but a reduction of the social cost adder, for example, is unacceptable. Accordingly, Energy Probe recommends that both domestic and export pricing policies be reviewed in detail in light of the Free Trade Agreement, particularly with respect to the social and environmental factors in the pricing formulas.

Price Elasticity of Electricity

Energy Probe submits that Ontario Hydro has yet to sufficiently understand the price elasticity of electricity in both its short and long term forecasting. The evidence suggests that there is a potential for electricity prices being forecasted as too low in the 1990s. In light of the inability to understand price elasticity, the reliability and accuracy of the load forecast becomes suspect.

Energy Probe, accordingly, urges the Board to recommend that Ontario Hydro accelerate their efforts in this area and present their findings at next year's hearing.

Interdepartmental Communication

Energy Probe is concerned that there seems to be a lack of interdepartmental communication between the Economics Department and other divisions in their decision-making processes. For instance, the economics department was apparently not consulted with respect to the Hydro's hedging activity. Similarly, there would seem to be less than satisfactory dialogue between the Economics Department and other departments with respect to rate structures.

This matter is also discussed under the heading: "Energy Management - Inconsistent Forecasts," below.

SECONDARY SALES

Ontario Hydro consistently under-costs export sales. It does so in several ways, many of which have been addressed in our past arguments. But as time passes, and the evidence mounts, we see that we have probably underestimated these subsidies to exports. For example, we (being Ontario Hydro, its present and future customers, and present and future generations of taxpayers) subsidize exports from nuclear power by absorbing the shortfall in insurance coverage for accidents, the risk of operation, and the uncertainty in the costs of spent fuel disposal. This year we heard that the U.S. has increased its nuclear industry compensation fund and liability limit from U.S.$560 million to U.S.$7 billion. The legal cap in Canada is roughly one percent of that - Can.$75 million.

The same pattern emerges for the costs of acid gas control and for the social costs of acid gas emitted due to coal-fired exports For the export market, coal related subsidies are of greater interest because the vast majority of exports are coal-fired, approximately 98% coal-fired in 1987, accounting for 20% of acid gas emissions.

a) Social Costs of Acid Gas

Since 1981 Ontario Hydro has been obliged to include in its export cost calculations a "Social Cost Adder" of 0.4$/MWh to account for environmental and health costs attributable to emissions associated with the coal-fired export. This cost is included in Ontario Hydro's expression of net revenue from secondary sales. Since Hydro is not obliged to use these funds to ameliorate the damage it causes or to give them to victims, it is perhaps technically correct from an accounting point of view to call this collection "profit". However, it is undesirable for other reasons.

First, the labelling of this cost as net revenue is indicative of Ontario Hydro's disregard of the externalized social cost of exports. Hydro's promise of accountability for its environmental impacts versus the reality is discussed below under the heading General Policy Matters.

Second, secondary sales are made to appear more profitable than they are in fact, by the inclusion of this amount in the reported "profit". This would perhaps be of slight significance if the figure of 0.4 mils was correct. But it is apparent to any informed observer that it is far from correct. Ontario Hydro apparently has no update for the number and has not done any work that suggests one is needed. Ignorance is bliss, deliberate blindness is less forgivable. Just the operating cost of a scrubber is close to three times the cost of the current social adder. Hydro will be incurring such a cost as well as the cost of using lower sulphur coal (at a cost that is at least 8.3% higher than standard sulphur level coal) and the amortized capital cost of scrubbers ($4-11/MW.h) and low NOX burners to meet the government imposed regulatory emission limit.

According to the evidence, the average variable cost of secondary coal power in 87 was 20.5 $/MW.h. Using Hydro's ratio of $15 million additional cost for lower sulphur included in $180 million of contract coal purchases, the cost of lowering the sulphur level amounts to $1.70/MW.h, which is probably a low estimate judging from the figures for further reductions incorporating scrubbers or SO2 conditioning of $4-7/MW.h at high capacity factors.

If we assume that the government acts rationally, that these costs imposed to abate acid gas emissions bear some resemblance to the benefit gained by the expenditure or the cost imposed if the emissions are unabated, it is reasonable to assume that the social cost of a MW.h of coal-fired power is some multiplier of $6.00/MW.h (the lower $4 price for scrubber costs with the current levels of sulphur obtained for about $2). It is a multiple of this number because the $6 is the amount spent to lower the level, by perhaps 50%, the government's much publicized goal, not to eliminate emissions.

If we assume that Ontario Hydro's efforts result in a halving of emissions compared to no abatement, then the approximate implied social cost of emissions is in the $12/MW.h range, of which only $1.70 (Hydro's marginal cost of lowering sulphur levels) plus $0.4 (the social adder) is currently being incorporated into the price of exports.

The social cost adder is not included in the accounting cost figures Hydro reports. Therefore, only the $1.70 is included in the average cost figure of $20.5/MW.h leaving at least $10.30 in social cost to be recovered in the "profit". However the evidence shows average revenue of only $29.9/MW.h for a net of only $9.40/MW.h. Thus we lose about one dollar per MW.h.

Given the public's view that the environment is not to be bartered, we do not believe that Ontario Hydro's secondary sales program is in the public interest. Given the possibility of free trade leading to a locking in of current levels of exports, the need to dismantle the program is heightened.

b) Costs of Acid Gas Control

In addition to the externalized costs of acid gas emissions, there are those costs that Hydro is currently incurring to control levels. The cost of lowered sulphur levels in contract coal deliveries is said to be 15 of the $180 million. But of course Hydro also pays a price to lower levels of sulphur in its other coal deliveries.

As noted above, only the average cost of abatement (roughly $1.70/MW.h) finds its way into the explanation Hydro offers of costing and net revenues from secondary sales. If Hydro could use a smaller buffer under the regulatory limit without secondary sales, it could reduce the abatement cost that all coal purchases bear, thus lowering the cost of domestic coal burn (however, emissions would not be reduced). Does Hydro buy coal with sulphur levels low enough to allow for enhanced certainty of the ability to make secondary sales? (In which case Hydro is underpricing secondary sales because some of the externalized social costs noted above are being reduced and borne in the cost of domestic sales coal to lower emissions to allow exports.) Or would the buffer level chosen below the regulatory limit be identical even if Hydro swore off secondary sales? (In which case all emissions from secondary sales are truly incremental, and we have the problem of subsidies in the form of environmental degradation, noted above, rather than cross-subsidies from domestic sales.)

In a rational world we wouldn't care; either subsidy is disagreeable. The proportion should not matter. Sadly, the regulatory framework is ill-equipped to deal with the environmental subsidy as compared to monetary cross-subsidies, so it is worth pointing out the likelihood that some of the subsidy is indeed of the cross-subsidy variety.

It was noted by Hydro that if secondary sales did not occur, Hydro's overall burn would be lower, suggesting that its average emission rate could be higher without bumping into the limit. Further, its average price of coal would be lower.

It was agreed that the added cost of lowering sulphur levels for domestic burn, a cost that could be avoided, in part, if secondary sales were not assumed, is not charged in the price of secondary sales.

It is not easy to estimate this cross-subsidy because even without any secondary sales forecast some of the buffer would of course still be needed to keep below the limit when unpredicted events cause increased coal burns. If we assume the buffer could be reduced by only 25%, the cross-subsidy is $3.5 million.

There are likely other cross-subsidies. For example, Ontario Hydro does not charge any depreciation to exports. Hydro assumes there is no plant life shortening or component life shortening due to the increased wear and tear on the plants. One need not be an engineer to feel confident in doubting that assumption.

Clearly however, the largest part of the subsidy to exports is externalized in the form of dead lakes, eroded buildings, increased rates of respiratory disorders and other effects of acid rain.

The possibility that these and other subsidies or the unequal application of the adder might lead to a countervail or free trade remedy is suggested to Hydro at Vol. VII, pages 945 - 948. We learn only that the issues have not been discussed much within Hydro. We understand their hesitancy to think about it. They would have to confront the reality that they are in the business of selling our health and environment, and aren't even getting a reasonable price!

We repeat our suggestion that the program be dismantled. If the Board is unprepared to suggest such a significant change, then we suggest the Board call for an immediate in-depth re-analysis of the level of the social cost adder and the appropriateness of Ontario Hydro's retention of the revenues it produces to subsidize domestic sales rather than its transfer to the victims or the provincial treasury.

FUEL AND FUEL RELATED

Nuclear Reliability

Ontario Hydro admits that CANDU aging is starting to cause reliability problems. The evidence notes that recent trends in lead indicators of performance (eg. maintenance backlog, training backlogs, temporary changes) are a cause for concern. It further reveals that the older units at Pickering NGS-A and Bruce NGS-A have had generally poorer performance in recent years.

We submit that given the history, the allowance that Hydro has made is heroically optimistic and that DAFOR should be raised across the board. While by definition it is not possible to predict the extent or timing of major unforeseen outages, the likelihood of such outages is on the rise steeply. Higher than actual DAFOR allowances in one year will serve to financially insulate the corporation from poor performance in another year.

We offer two examples of the potential for significant outages.

After revealing that Hydro does not plan to replace calandria tubes in those reactors where retubing is done prior to the 20 year mark, it was noted that this conclusion is subject to what is found in the process of replacing the pressure tubes. If that possibility should arise, there will be a lengthened outage, additional costs, and the possibility of major problems due to calandria vessel stress.

Similarly, at Bruce-A, the retubing will involve new approaches to maintaining containment. The geometry of the four adjacent reactors and containment at Bruce is entirely different than at Pickering. It is entirely possible that Hydro will be forced into an extended shutdown to obtain adequate containment or to shut down the adjacent reactors if this proves too difficult or expensive. Only time will tell.

Accordingly, Energy Probe supports the increase in DAFOR and submits that further increases be made. However, given the nature of the evidence it has not been possible to identify the extent or cost of these increases.

OM&A & CAPITAL

Management of Costs

The $480 million increase over last year's estimate for the Darlington Nuclear Generating Facility is attributed to construction delays and insufficient commissioning staff. Hydro claims that lead times in nuclear licensing prevented timely adjustments to the schedule.

Given the importance of capital cost estimates in planning system changes and the particular risks to estimates of nuclear costs, noted above, Energy Probe recommends that further consideration be given to this problem and a report be presented at the next hearing.

The Need to Consider the DSPS Study

While we understand that DSPS was specifically excluded from consideration by the hearing's Terms of Reference, we recommend that the Board inform the Minister of the difficulty this omission causes in fulfilling its mandate, and that the Board have the opportunity to review the DSPS report and the report flowing from the body which reviews it in the context of Ontario Hydro's rate-making process.

"No Real Rate Increase" - Rate Driven or Program Driven?

Extensive evidence was presented this year on the business planning process. In simplified terms, the business planning process is supposed to be driven by program needs which, in turn, are designed to achieve Ontario Hydro's corporate objectives. However, Hydro continues to promote the policy of "no real rate increase in the 1980's," despite this Board's previous rejection of the policy. Hence, the process becomes very confused when the "no real rate increase" policy is superimposed on the business planning process which supposedly tracks the real costs of energy production.

Even more disturbing is the fact that the new corporate strategy for the 1990's will essentially continue this policy.

We submit that the OEB should note the inappropriateness of a rigid no real rate increase policy as it has done in the past.

+/- 5% Analysis

A business planning process is only as good as the inputs into that process. Energy Probe submits that the +/- 5% OM&A Branch Resource Variations, one important input into that process, suffers from a number of weaknesses. Foremost, Ontario Hydro would seem to concede that there is a very wide range in the quality and level of detail of the analysis done. We are also concerned that the analysis does not lend itself to practical application either because it is not respected in the decision-making process or not applied in a timely fashion.

For example, an increase in "nuclear trainee hiring" was given a "priority 2" (which means that this would be the second area where further reductions would be required within the context of the sensitivity analysis). While this sensitivity analysis suggests this is a "mid-level" priority, Ontario Hydro announces a few months later the need for a multi-million dollar Nuclear Hiring Program.

We submit that the +/- 5% exercise must be elevated in stature by Hydro or be eliminated. At present, it is simply not taken seriously as a business planning technique.

Ontario Hydro's Salary and Wage Scales

It is important to recognize that Ontario Hydro, as a general principle, must employ competent people with appropriate remuneration and benefits in those highly sensitive occupational sectors where expertise, intensive training, and specialized knowledge is an imperative, such as nuclear plant operators.

However, this is the general principle, and it is important to question whether this principle is applicable over all occupational sectors. In the absence of convincing evidence establishing that a particular occupational sector falls within this principle, the OEB's past recommendations of moving steadily toward community levels should be followed.

Productivity Targets - General and CRESAP

We welcome the CRESAP effort and await its final results and the review of those results in H.R.-18.

Preventative Maintenance Expenditures

Energy Probe continues to support the need for enhanced preventative maintenance in the nuclear program for reasons of public safety.

Liability for Major Unforeseen Accidents

At present, the Nuclear Liability Act limits Hydro's liability in the event of a nuclear accident to $75 million while completely shielding manufacturers and suppliers from liability.

In the HR-16 OEB report, it was stated that the "Board is very concerned with the question of liability in the event of major unforeseen incidents." Further, it recommended that the Minister fully explore this issue.

For a number of reasons, Energy Probe urges the Board to re-iterate this recommendation, perhaps in stronger terms. In the U.S., the Price-Anderson Act sets a liability about $800 million, and if current legislation in the U.S. Congress is approved, those liability limits will be increased to approximately $7 billion. At present, the federal government is currently reviewing the Nuclear Liability Act, one issue being whether the liability limit and required insurance should be raised, and if so, by how much. Further, once the Darlington Nuclear Generating Facility is completed, over sixty percent of power in the province will emanate from nuclear generation.

Power at cost should include adequate insurance for risks. Otherwise Hydro is

being allowed to externalized yet another cost.

Nuclear Core Capability

Hydro, and other stakeholders in the nuclear industry, have expressed concern as to the fate of nuclear design capability, and in particular, the appropriateness of maintaining such a capability once existing projects, such as work on Pickering 3 and 4 and Darlington, is completed.

Hydro claims that no money is being spent to maintain core capability for future uncommitted Candu units.

The question remains as to how much of the funding of AECL research and COG (CANDU Owners Group) funding is actually employed to enhance future as opposed to present CANDU capability.

Mr. Franklin was candid in his response that there may be some bridging required to retain the nuclear capability before a concrete decision is made as to build another nuclear facility. The extent, cost, and appropriateness of that bridging remains a legitimate issue.

Given Hydro's choice of 2040 for an end date for heavy water depreciation, it would appear that an assumption of an extended nuclear program has already been incorporated into Hydro's plans. The appropriateness of that assumption and the "bridging" costs should be re-examined in H.R. 18.

Nuclear Operations Hiring Program

Energy Probe takes the position Ontario Hydro should allocate and expend adequate human and financial resources to enhance the safety, reliability, and environmental performance of its nuclear facilities.

While Energy Probe does accept wholeheartedly the principle of adequate resources for the nuclear program (so long as it persists) the Board is asked to review and comment on a multi-million dollar program with virtually no evidence as to the basis for this expenditure.

Hydro was unable to relate either Outstanding Deficiency reports or Significant Event Reports to safety, although it was noted that mechanisms are in place to prioritize deficiencies in terms of safety implications. Hence, little guidance was provided as to the relationship between the hiring program and safety concerns.

Energy Probe suggests the Board advise the Minister of the lack of information available.

DEPRECIATION

Pressure Tubes - actual service lives

Engineers are an optimistic group. Dominating the Depreciation Review Committee as they do, they're also the group with the most say at Hydro about asset service lives.

However, despite the high caliber of the engineering staff at Hydro, the track

record of those engineers when it comes to foreseeing problems does not lead us to believe they have a better crystal ball than others.

In fact, we believe they are no better at predicting the metallurgical future of pressure tubes under radiation conditions that have never before been experienced over extended periods than they are at predicting how fast oil tracer tubes will rust out when damp. They got it wrong with rusty oil tubes. They got it wrong with deuterium ingress in new Zirconium-niobium alloy pressure tubes. They didn't know about carbon 14 contamination until it was too late at Pickering 1 & 2. We now submit that their assurances of 30 year tube life are worth little more than the paper they're written on.

Hydro has yet to achieve 15 years of active service from pressure tubes but is experiencing significant problems and uncertainties. We submit that a more prudent financial policy would assume a maximum 20 year life, half the current expectation from the plants themselves. Thus, even if 40 years of plant life is achieved, only two sets of tubes would be used. (However we also submit that 40 years is unrealistic, see below.)

A ten year shortening of fuel channel service lives for Pickering-B and Bruce 3 & 4 and Bruce-B would result in an increase in annual provisions in 1989 of $21 million and a corresponding increase in depreciation expense of $7.9 million.

In addition, we believe it is reasonable to assume that the scheduled 1.5 and 1 year outages for 1992 and 1993 for Bruce 1 & 2 will become retubing outages. It seems obvious that retubing during those lengthy outages rather than 4 years later would be cost effective, and would be prudent from a public safety perspective. However, it appears that Hydro's schedule has been influenced by electricity system reliability concerns. We fear that public safety is being compromised by the delay in retubing necessitated by a 50-60% nuclear reliant grid. The Board should not encourage that possibility.

Accelerated retubing of B-1 and B-2 would increase depreciation and provision expenses by at least $20 million.

Pressure Tubes - depreciation period

Hydro depreciates its pressure tubes and collects provisions for tube removal over a period ending at the time when the replacement tubes come into service rather than ending at the time that the first tubes stop offering a benefit to consumers. The effect is to push costs into the future where there is no offsetting benefit. In 1989, the change in revenue requirement due to this policy amounts to $21.9 million.

To argue, as Hydro does, that equity will be achieved because in a group accounting situation some assets will not achieve average service lives but others will exceed the average is irrelevant when the actual average service period of the entire group will not achieve the average accounting service life due to the artificial length of that period. Hydro's approach could be used to justify depreciation of nuclear plants until the time of their eventual disposal 50 years after they stop running.

Similarly to suggest that the 1 - 2 year hiatus between tube generations is just like an outage at a generator, and depreciation should continue, is to confuse the tubes with the plants within which they are found. Hydro either does or doesn't account for them separately. Ontario Hydro agrees that life end for a component is quite different than an interruption in active service.

Nuclear Plant Service Lives

Just as "no real rate increase over the eighties" is the preordained path for rates come hell or high water (or OEB criticism of such an unduly rigid approach), Ontario Hydro seems to have adopted "40 years at an 80% lifetime capacity factor" as a prediction to which reality must be made to conform.

Hydro's view is that calandria vessel life is the determining factor. Hydro's witnesses noted that pressure vessel life was the limiting factor for U.S. light water reactors as well. It was accordingly with some surprise that we learned that Hydro's witnesses, including the head of the Depreciation Review Committee, were unaware of the trend in U.S. nuclear plant depreciation periods.

Mr. Wilson was able to fill in the gap when he described how the typical 40 year expectation of the 60's and 70's has given way to reality, with some utilities now using a 25 year period.

Given the simple fact that no one has a good handle on what happens to nuclear reactors as they age, this trend abroad should be enough to suggest that Hydro may be unduly optimistic. But let us not forget one important difference between the CANDU design and its light water counterparts. The CANDU is blessed with the added uncertainty of zirconium pressure tubes - an uncertainty that is already resolving itself in the direction of life shortening.

If, for example the second set of tubes lasts only 18 years following 15 years for the first and a 2 year outage in between, it is clear that a second retubing would not be economic.

Of course if the first tubes in later reactors last as long as Hydro predicts, 30 years, there is also a question of whether retubing will make any sense in a 30 year old plant that is more radioactive, suffering more aging of other components and the uncertainty of calandria vessel life limitation. Hydro claims it is economic to retube at year 30, even though there are no studies available on the question.

IPPSO sought leave to lead evidence on the metallurgical questions but was denied the opportunity. Perhaps the Board recognized that the OEB may not be the ideal place for such a highly technical debate. However Dr. Hare's ONSR has expressed great concern about the pressure tube problem, exhorting Hydro to spend significant time and money to improve its understanding and search for solutions.

On balance, leaving engineering fervor and optimism aside, and considering all of these factors and scenarios, Energy Probe submits that 30 is a far better bet than 40 years.

Heavy Water Service Life

Hydro depreciates heavy water to the year 2040 on the assumption that the

CANDU concept is good until 2040. Even assuming 40 year service lives for nuclear plants, they will all be retired by the year 2032. Station retirements range from Pickering-A's in 2012, to Darlington's around 2032.

Heavy Water and D2O production facilities account for close to 4 billion dollars of book assets. Some of the production plant (the abandoned plants) is being written off into rates sooner but the depreciation expense of active plant is charged to the cost of heavy water and thus much of the heavy water plant is also depreciated to 2040.

Hydro's position seems to be that depreciation is intended to recover costs over the useful life of the asset. But it is our submission that 2040 is an arbitrary date and the governing principle must be the matching of costs with reasonably predictable benefits.

Accordingly we urge the Board to recommend an end to this obvious abuse of the interests of future customers. As in the past, we recommend that heavy water be treated as a plant component, governed by the general policy Hydro employs of limiting service lives of components to a date no later than the retirement of the associated plant.

Irradiated Fuel Disposal

Hydro has indicated that a detailed study of I.F.D. cost estimates will be available later this year (for H.R. 18). Accordingly, Energy Probe chose to wait for that study before leading evidence on the issue.

However, we are concerned that the inadequacy of current provisions is leaving a large bill for the future and accordingly we suggest that the Board refer to what evidence is available to amend the basis for provisions on an interim basis.

We note the evidence of a possible 50% increase in AECL's estimate. The delayed disposal will supposedly counteract this change but the evidence suggests we can't bank on that.

But even the new estimates may not take in the full costs according to the evidence. It is admitted that Hydro is not even including such basics as the cost of the disposal site! Furthermore, it is acknowledged that the history of nuclear regulation has been one of increasing safety requirements and costs over time.

Evidence shows U.S. disposal estimates of 2.8 U.S. Mils/KW.h. Hydro's approximate 0.4 U.S. Mils/KW.h is a far cry from the average of the studies that Hydro reports. As an interim measure, we suggest raising the basis of Hydro's provisions to conform to the average of the U.S. studies reported, an increase of $168 million in 1989 provisions.

Nuclear Plant Decommissioning

U.S. decommissioning cost estimates have risen since Hydro last studied the matter. We also note Hydro's 25% contingency allowance for this event set 50 years hence - an incredible number considering that Hydro also uses 25% for retubing scheduled just two years ahead.

A 100% contingency allowance would not be inappropriate for a new task, the basic aspects of which are totally unsettled, and scheduled for 50 years from now. Accordingly we suggest a 75% increase in the 1989 provisions, increasing the $30.6 million figure by $23 million.

BORROWING PROGRAM

Hydro's Hedging Program

Energy Probe, as in past proceedings, takes the position that a risk averse strategy for Ontario Hydro's borrowing program is in keeping with Hydro's obligation to treat different generations of customers equally. Further, as stated in last year's argument, "it is inappropriate for an organization such as Hydro, that is not accountable to equity investors, to speculate in arenas like the foreign exchange market."

Energy Probe, therefore, supports efforts by Ontario Hydro to establish an appropriate and adequately resourced hedging and swap program to reduce these borrowing risks. We particularly support the Special Hedging Program undertaken in 1988.

Relationship with the Ministry of Treasury and Economics

In H.R.-16, the Board expressed the view that more frequent and timely communications with the Ministry of Treasury and Economics regarding Hydro's borrowing program would be appropriate. While the evidence indicates some improvement in the lines of communication, there is still no systematic oversight procedure in place to ensure the continuity and timeliness of communications between these agencies.

FINANCIAL POLICY

Pressure Tubes

see: DEPRECIATION - Pressure Tubes - depreciation period (above).

Uranium Contracts

For years the OEB and most participants have argued that the cost of uranium advances and the associated interest is a overvalued "asset" and Hydro should recognize the inevitability of a writedown. This year Hydro has finally agreed to stop capitalizing interest on the advances (to the unamortized advances) in recognition of the fact that the maintenance of the advances is not providing a future benefit that warrants capitalization.

They refuse to apply this logic to the advances themselves, adopting the strict accounting approach of no loss recognition until contract cancellation. But surely, from the perspective of rate setting, fairness demands similar treatment of the advances themselves. In common parlance these assets have lost significant value.

Hydro rejects the notion of reducing the value carried on the books to an appraised value of a replacement contract on currently available terms. They argue that so long as nuclear power makes any sense at the contract price, the contract is providing a benefit to customers.

There is no magic to the contract termination date. The loss is for the most part predictable. The contract offers virtually no benefit to customers given the availability of alternate contracts. Hydro should not be permitted to pretend all is rosy. The $767 million in unamortized advances should be written off over the next few years. We suggest a minimum $150 million in 1989 to achieve a five year writedown.

Fossil Service Lives and Other Component Replacement Situations

Hydro has reduced its revenue requirement by $30 million by extending service lives of fossil plants from 30-35 to 40 years. We are concerned that customers in the later years of a fossil plant's life will now face both depreciation charges on the original components and on replacement components, but will benefit only from the later. This is another example of Hydro's consistent tendency to push costs off into the future.

Similarly the first spent fuel bays at nuclear plants will be depreciated to the 40 year plant life but will need to be augmented with new bays to receive fuel as they fill up. This leads to the same concern, present customers pay depreciation on the one bay they are filling, but future customers pay for their bay and their parent's bay as well.

It was indicated that the DRC will be looking into this concern (with respect to the fuel bay example). Accordingly we assume that the problem has not been addressed at the coal plants either.

One Hydro witness did agree that equity dictates that extension of plant service lives should not include extension of service lives of the components being replaced to achieve that extension.

We therefore suggest that the fossil plant lives not be lengthened pending an analysis from Hydro of the extent of the problem there and elsewhere on the system.

USX Mine Costs and Petrosar Settlement

Hydro proposes to recognize the Petrosar and USX costs over five years.

In general, Energy Probe prefers timely recognition of losses or of reduced value in assets. However a short period of amortization is attractive for rate making purposes, to smooth rates and average the impact across several years of customer use. This averaging helps match the burden to the typical pattern of use. These competing goals can be satisfied with a two to three year amortization period in the case of the USX and the Petrosar losses.

Given the possibility of further mine closing costs after November of 1990 which will impact on 1991 rates, a two year period will enhance smoothing.

For the USX costs this would increase the 1989 revenue requirement by $25 million, the 1990 by 22 compared to the submission. We estimate that recognition of the Petrosar settlement costs over two years, instead of five years, would increase the 1989 revenue requirement by $50 million compared to the submission.

NET INCOME

Part 1 - Excluded Issues

Despite the Minister's comment to Energy Probe that he awaits the Board's input on questions of risk and the cost of capital, the question of the appropriate cost of capital has been excluded from the review this year. Energy Probe simply wishes to note for the record that it has not abandoned its views expressed in H.R.16 on the subject (views in substantial agreement with the Board's findings) and urges the Board to draw the Minister's attention to the findings made in H.R.16 in its H.R.17 Report.

Part 2 - The asymmetry of Hydro's vision and our risk

We learned this year of an external consultant's report which finds that there are 2000 surplus personnel at Hydro. Hydro's President and Chairman agrees. But last year we were told that they were cutting down to the bone to trim OM&A and no excess was identified on the plus or minus 5% analysis.

In 1984 we were told that pressure tube hydriding was only a problem with the old alloy and thus limited to the Pickering 1 and 2 reactors. This year we learn of the need to retube Pickering 3 and 4 and the Bruce 1 and 2 reactors in the near future because of hydriding. Somehow Hydro's nuclear engineers keep making promises they can't keep.

Last year charging the interest on uranium contract advances to unamortized fuel advances was perfectly justifiable as part of the cost of a valuable asset to serve future customers. This year its not so valuable, although the advances themselves remain on the books at full cost as "an asset that will serve future customers".

This year we are told that reactors will last 40 years, that new pressure tubes with 4 garter springs will last 30 years, that calandria tubes will last 30 years, and that we can bet on each of these predictions. But increasing concern about reactor reliability and backlogged maintenance has led to a sudden need for 1100 persons in the nuclear staffing requirement. Care to invest your family's savings on Hydro's predictions of plant service lives?

How should the Board approach its task in light of this record? Energy Probe submits that prudence is an appropriate guiding philosophy for regulators seeking to enhance equity, discourage excess, and encourage sound planning. In its advisory capacity, the Board should do no less. This Board must not be led down Hydro's garden path, oblivious to the significant risks that we are creating for, or foisting upon, future customers.

Hydro's past record shows a disturbing trend toward overly-optimistic predictions. This year the asymmetry is even acknowledged in the exhibits concerning net income but Hydro is unable or unwilling to estimate what the median risk forecast is. Of course, even if they did provide a mid-risk estimate that took into account the various risks they have identified, there appears to be a consistent pattern of risk non-recognition. And just as Hydro's conscious treatment of risks underplays the risks that tend to increase costs in future, Hydro's non-recognition of risks is most prevalent with respect to risks of increased future costs.

Hydro's financial and accounting policies are a testament to this tendency. Perhaps the most glaring example is Ontario Hydro's practice of depreciating heavy water to the year 2040 on the assumption that "the Candu concept" is good until then. This, despite the fact that all of Hydro's reactors will be long out of service (even if we use Hydro's optimistic reactor depreciation schedule). Is this conservative accounting? Again, we propose a simple test: would you bet the family home on it?

While we advocate specific measures for some of the particular assumptions noted (for example shortening service lives), the difficulty is that many of the assumptions are unexamined or not susceptible to substituted assumptions that warrant any greater confidence. All we can say about much of the future is that its unpredictable but more likely to cost more, than less, compared to current "best" estimates. The principal tool available to deal with this residual asymmetrical uncertainty is net income.

Even if we do not try to make up for poor net income performance in recent years specifically, and instead focus on the overall financial health and risk profile of Ontario Hydro, we believe the time is right for a relatively higher net income performance. An examination of the long-term trend reveals a very slight improvement in the debt ratio. However, in our submission, the risk profile of the corporation is increasing significantly and steadily as it becomes more reliant on nuclear generation.

Ontario Hydro does not now use actual operating risks in setting net income but now uses financial indicators. We submit that some operating risks are still (and increasingly) worth reviewing.

Ontario Hydro will be reliant on nuclear power for over 60% of energy in 1992. At the end of 1987 nuclear assets outweighed equity $19,330 million:$4,962 million.

This huge reliance on a single technology creates a new class of risk. A significant portion of assets and of productive capability is tied to untested assumptions about service life, and reliability. A significant technical or safety related problem, if permanent, or a revision of service life estimates, could wipe out the value of a majority of Hydro's assets and throw the utility into an expensive and chaotic scramble to meet electricity demand. But even a temporary problem could bring Hydro to its knees. Witness the impact of shifting the 18 day vacuum building outage at Bruce B on net income in 1988 - $25 million.

The disparity between Hydro's $75 million in liability for a serious nuclear accident and the U.S. level of U.S.$7 billion is noted in the context of a discussion about the free trade agreement. (It should also be noted that nuclear plant component suppliers and consultants are completely shielded from liability by the same Nuclear Liability Act.) While that legal limit may well shield Hydro from one expensive aspect of the nuclear risk, it does not shield it from the risk of loss of assets or difficulty in providing power in the event of a significant problem. The existence of both the American and the Canadian liability limiting laws indicates that the industry certainly believes there is a significant risk, one they are not prepared to bet on themselves.

Hydro's response is twofold; they have voluntarily intervened to oppose Energy

Probe's court challenge of the Act, and they have studiously avoided studying the implications of a major nuclear outage. We are intrigued by the contradiction.

We submit that Hydro must be made to acknowledge and, if not reduce, then at least plan for these risks. Hydro does now acknowledge pressure tube failure as a "foreseen risk" (hence the concern about safety system trips due to increased emergency coolant flows at Pickering 3 & 4 if REFAB were to be conducted). But they are unwilling to acknowledge any financial risk if it means a suggestion of a public safety problem. Indeed they won't even admit that their knowledge of reactor metallurgy is far from adequate to ensure that even the financial risks are unlikely.

Reality has forced Hydro to admit that new (post-Pickering 1 & 2) tubes can suffer Deuterium ingress problems despite earlier claims that there was no possible problem. Now they claim to fully understand the blister formation problem, and are claiming that ruptures are only a concern at reactors with two garter springs. This kind of ostrich mentality is perhaps the biggest risk to the public and to financial health of Ontario Hydro. The world of nuclear risk has changed since the 1950's and Ontario Hydro is increasingly a part of that reality.

Despite this changed reality, and after years of net income performance well below Hydro's own modest targets, several intervenors will argue that the current outlook for net income to exceed targets in 1988 and 1989 should lead to a significant reduction in the rate increase. We strongly disagree. The opportunity to improve financial soundness without undue rate increases should be welcomed by all. Indeed we cannot be certain that net income will in fact be as high as currently predicted, as Mr. Burdette noted on several occasions in the hearing.

Similarly, other intervenors, who agree with Energy Probe that the losses associated with the Petrosar settlement, the USX Cumberland Mine advances and the loss in value of the Elliot Lake Uranium contract advances should be recognized in rates over a shorter time frame, may argue that the "extra" net income in 1988 and 1989 be used to offset those losses. For the same reason, the need to improve financial soundness in the face of growing uncertainty and the need to reflect costs in the price signal to consumers, we disagree. Those losses should be recognized, but not at the expense of reduced net income.

In summary, even assuming the short-term outlook is as rosy as hoped, we urge the Board to recognize the need to bolster Hydro's capability to weather uncertainties. Accordingly, we favour a trend toward increased net income. All the adjustments to revenue requirement we propose should be met by increasing the rate levels. The net income Hydro has projected in its updates should be preserved or enhanced.

ENERGY MANAGEMENT

Asymmetry Is Our Motto

If you were to believe the April 9th Globe and Mail report of an interview with Hydro's president entitled "Hydro's new motto is conservation", you would assume that just as Hydro won't push conservation for conservation's sake they wouldn't push needless electricity consumption either. You would be wrong.

It is apparent that Hydro is still hanging on to a no losers test to avoid cost-effective investments in efficiency enhancement at the customer level but is happy to break that rule when it comes to encouraging more electricity use.

It becomes clear that Hydro has significantly curtailed its demand management efficiency targets below economically supportable levels because of concern over rates. They have, in effect, used a modified no losers test (despite Select Committee condemnation of that test). They argue that high rate increases would make the lowest societal cost option unattractive but they have not sought to design innovative financing and rate structures to attain these admittedly economical efficiency gains by sharing costs and benefits throughout the system.

In contrast, the no losers test doesn't stop Hydro from marketing new electrical load. Moreover, Hydro does not count the externalized social costs of the incremental load they encourage.

Mr. Franklin tells us that it's part of Hydro's commitment to serving the customer when Hydro encourages new load that will have dis-benefits to the balance of system users. Oddly enough, they won't take that view when it comes to efficiency. They won't even go after all the efficiency that benefits system users.

We suggest that to nourish any hope of getting Hydro on track, all load building programs (and special rates) must be canceled.

Inconsistent Forecasts

We might expect resistance to demand side efficiency given Hydro's heritage of generation system construction, and its management populated by nuclear engineers. We would expect conservative forecasts for cost-effective efficiency and optimistic ones for generation construction costs. But even these forecasts are asymmetrically applied within Hydro to favour generation over efficiency. A few examples were uncovered in this year's hearing.

The evidence reveals a discrepancy of 100 peak MWs between E.M. targets and the load forecast for 1993. We presume this is because the increased E.M. goals have not been captured in the load forecast. The difficulty is that the rest of the corporation uses the official load forecast to plan from. Or worse still, starts with the load forecast and adds load to it as we saw in the case of the decision to reopen part of Lennox.

The same explanation does not explain the 354MW disparity for natural conservation. Similarly there is no increase in parallel generation for 1992 and 1993 but 100MWs is expected by the E.M. group. One is tempted to assume that there's 100MWs under any rock we may care to examine. Another asymmetry.

Parallel Generation

The Board will be aware of its previous suggestion of a special hearing or process to deal with concerns about parallel generation. We do not propose to revisit the long list of concerns here. The evidence of IPPSO provides numerous examples of the weaknesses in Hydro's pricing policies.

However, we note that while the independent water producers are aware of the problems stemming from Hydro's favourable tax treatment, capital access, capital costing, depreciation periods, and site access, they fear the cost and time involved in regulatory proceedings. We suggest an arbitration or appeal-like process would allow them the freedom to negotiate on a one-on-one basis but give them some clout.

We offer the Board two other observations which may be relevant to its considerations on other topics. First, it is clear that the bulk of cogenerated power comes from and is expected to continue to come from self-generation. (1100MWs of self-generation capacity in 1988 vs. 25MWs of grid dedicated parallel generation.) Thus the rates Hydro charges its customers (that they can avoid by self-generating) rather than the rate it offers to buy power, is the primary dictator of cogeneration economics. Declining block rates hurt, time of use should help.

Second, the $1.3 billion we've heard discussed is not the cost of Hydro's programs until 2000 to encourage parallel generation. It is the capital amount of loans. Hydro will only have to pay an interest buydown. The president's initiatives do not lead to an increased target for parallel generation beyond that already adopted by the E.M. branch. A serious commitment on Hydro's part to parallel generation is yet to be seen.

RATES

Special Condition (S.C.C.) rates

Energy Probe submits that Special Condition rates are discriminatory, wasteful, and likely do not recover costs in many cases. Nor have they performed to Hydro's expectations. The 1987 proposal assumed $1.3 million in net benefits but Hydro now reports only $74,000. In its 1988 proposal Hydro hoped for $1.2 million, now it has lowered its sights to $344,000.

Hydro argues that recent improvements in the provincial economy will enhance the customer's ability to take advantage of the S.C.C. rates. We fear that any improvement will be illusory. New S.C.C. customers may be customers with new load that would come on without the special rates and is new because of the improved economy. On the other hand, if new load is truly incremental, we all bear the social costs of the incremental fuel burn. A cost far in excess of the meager contribution to fixed costs Hydro seeks in these rates as we have demonstrated in the discussion of secondary sales.

There is a particular problem with the intermittent rate, an increased risk of less nuclear power at the margin than predicted given recent developments.

There is also a significant risk associated with the Mechanical Pulping rate that Hydro has apparently ignored. In addition to taking customers at their word when they promise that the load is incremental, Hydro has taken credit for increased contribution to fixed costs in the pre-1995 period, but has not accounted for the risk that these customers might have waited for several years after 1995 to install equipment and saved us all a few years of increased capacity stress.

Rate Reform Proposal

Energy Probe is generally supportive of the reform proposal. We have long advocated seasonal rates. The shift in the Demand:Energy split is a reasonable attempt to reflect Hydro's system costs in rates and is in keeping with a move to time of day differentiation.

We stress the need for the seasonal component to be visible in retail rates. No additional metering is needed and this will give customers the key price signal needed to reduce system peak capacity problems.

We also wish to indicate our concern about the 14 year freeze on further changes. Mr. Franklin tells us it's no guarantee and he will change rates if necessary. But clearly the other parties to the agreement believe the clause has some effect and it will surely cause problems if Hydro does seek to change the structure before 2001.

OEB staff evidence indicates that the likely effect will be to postpone small changes with the ultimate effect of a large structure adjustment in 2001. This does not serve the interest of smoothing or equity.

We believe rates that discourage needless system growth will be understood as appropriate by the vast majority opposed to more nuclear power and acid gas.

GENERAL POLICY

The President's Initiatives - Hydro's Commitment to Enhanced Accountability vs. The Reality of its Conduct

The president's initiatives and the "green annual report" offer some hope of a more accountable environmentally sensitive future for Hydro. However we are concerned that its performance on the energy management front (see above), its willingness to barter the environment for secondary sales "profits" and ignore the mounting evidence of the cost of acid gas and some other examples that came to light in the hearing show Hydro to be off to a slow start.

We note for example that the third slide in Hydro's presentation of the pros and cons of tritium sales notes: Tritium is used in nuclear weapons; Export seen as loss of control; and more tritium into environment.

Hydro notes the public's concern about the tritium removal facility at Darlington and related transportation of radioactive tritium and pledges a renewed openness and support for public reviews and accountability processes. But Hydro has refused to submit the undertakings to the environmental assessment process and successfully fought Energy Probe's attempts to secure an assessment.

Another concern arises from Hydro's approach to the decision to extend coal plant life and build scrubbers. On its face the Flue Gas Desulphurization Program Environmental Assessment seeks approval (subject to minor site specific decisions) to put in place any of four different scrubber technologies at any of three different sites on a schedule and to a degree left to Hydro to decide later.

From its cursory treatment of alternatives it is apparent that the study and any resultant hearing is not intended by Hydro to be the place where tradeoffs between this approximately $6 billion program (including plant life extension costs) and efficiency programs will be made.

The DSPS assumes scrubbers and coal life extension that Hydro presumes that the Select Committee process is not intended to look at the scrubber question. It was also pointed out how the best estimate of the likely scrubber program has been reduced from 8 to 6 scrubbers by the year 2000 as a result of the president's initiatives to encourage demand side efficiency.

Mr. Franklin acknowledges that to some extent the coal program and efficiency program are alternatives to one another but believes that the processes are not inconsistent. He refused to entertain the suggestion that the first few scrubbers, that are not controversial and are needed quickly, be assessed separately from the entire program so that the sixth scrubber and coal life extension could be compared to the marginal efficiency program.

We believe Mr. Franklin's assumption that each process is open to a consideration of the competing options is technically correct but practically unavailable. The urgency felt for the first scrubbers will foreclose the lengthy process required to assess competing demand side options for the last scrubber, and the DSPS, it has been noted, assumes the full scrubber and coal life extension program will be in place.

Hydro similarly ignores the importance of the appearance of openness to new directions. One example is heavy water depreciation ending in 2040, long after the current generation of reactors are retired. The built-in assumption of an active CANDU concept until 2040 is not seen by Hydro as counterproductive to encouraging open unfettered public debate. We must disagree.

We ask the Board to note these concerns in its report to the Minister.

SUMMARY OF IMPACTS ON 1989 REVENUE REQUIREMENT

All figures approximate in millions of dollars

Cancel secondary sales program	60
Change in depreciation rate and provisions for pressure tubes (service life adjusted to end of active use)	21.9
Reduce pressure tube lives by 10 years (P-B, B-B, B-3, B-4)	7.9
Increase provisions due to 10 yr. shortening	21
Retube B-1, B-2 in 92 and 93	20
Reduce reactor service lives to 30 years	undetermined
Reduce D2O service life to match reactors	undetermined
Increase I.F.D. provisions	168
Increase decommissioning contingency	23
Begin to recognize loss in uranium contract value	150
Maintain depreciation rate of fossil plants	30
Shorten service lives of 1st fuel bays etc.	undetermined
Two year amortization of USX costs	25
Shorten amortization of Petrosar costs	50
Cancel load building programs	undetermined
Cancel special condition rates	undetermined

TOTAL (ESTIMATED ITEMS ONLY) 576.8

H.R. 17

THE ONTARIO ENERGY BOARD

IN THE MATTER of the Ontario Energy Board Act, R.S.O. 1980, Chapter 332;

AND IN THE MATTER OF a reference to the Ontario Energy Board by the Minister of Energy in respect of the proposed bulk power rates or charges of Ontario Hydro for 1989.

EXECUTIVE SUMMARY

FINAL ARGUMENT OF THE

INDEPENDENT POWER PRODUCERS SOCIETY OF ONTARIO

August 2, 1988

I.P.P.S.O.
P.O. Box 1084, Station 'F'
Toronto, Ontario
M4Y 2T7

F/93

0.0 INTRODUCTION

Ontario Hydro ("Hydro") presents a particularly challenging management and control puzzle. Not only does Hydro face the problems inherent in any large organization, but because of its unique role within the Ontario economy and its special administrative and regulatory environment, it is challenging for the organization to formulate clear and beneficial policies and then implement them effectively.

Hydro's corporate culture, as it presently exists, has resulted in serious underestimation of financial risk to the organization, particularly in the area of pressure tube service lives and delays in plant in-service dates.

The Cresap management study did not address the fundamental root of these problems, namely, resulting from limited accountability over the years in Hydro's setting and implemention of policy. Hydro is at present less accountable in their decisions and implementation than just about any private sector organization and all or most of government. In general, there are no measuring sticks for determining whether Hydro is doing well or not.

Accountability stems either from a set of external rules that reflect the true economic realities of the enterprise, or from the application of external judgment, whether direct, as in the case of a regulatory agency, or collective as in the case of the election or non-election of a government.

Accountability can be divided into day to day accountability and ultimate accountability.

Better day to day accountability may be realized by implementing Cresap recommendations to establish credible and insightful performance indicators, rationalize the corporate structure, improve business planning and performance contracting, delegate approval authourities to lower levels, and implement corporate cultural change.

The solution for ultimate accountability is for the the actual decision process as to rates and any other major decisions affecting Hydro to be made in public, so that the public can see why the decision was made and on what evidence. This end could be accomplished by Ontario Hydro's Board of Directors undergoing a public review process of their own, by enabling legislation giving the Ontario Energy Board binding authourity as a regulator or by creating a new agency to oversee Hydro.

1.0 ECONOMICS

The delivery of indirect incentives to electricity consumers in Ontario, from the Ontario government via Ontario Hydro, runs contrary to the notion of Free Trade. If there is a social goal to be achieved by inexpensive power, that social goal is best achieved by direct incentives administered by government, not indirect incentives administered by Hydro. The former, intended to achieve a social goal, are more likely to escape the undermining effects of Free Trade.

The model presented by Ontario Hydro on the long term impact of Free Trade on Ontario Hydro's sales may have some serious near term caveats. The most prominent is that it doesn't predict near term exchange rate effects on Ontario's GDP which could wash-out the near and medium term effects resulting from Free Trade as predicted by their model. If the Canadian dollar rises significantly higher, this may reduce Ontario's price advantage in the export marketplace.

Other factors such as "marketplace emotion", policies of the Bank of Canada and the U.S. Federal Reserve or other agents of international government monetary policy may override the natural marketplace response to Free Trade as assumed by Hydro's model. It is not impossible that short term actions may result in unforeseen long-term consequences. Therefore, Hydro should develop a contingent strategy for reduced direct sales in the near term resulting from the Free Trade Agreement (FTA).

2.0 ELECTRICITY SALES

RECOMMENDATION: that the short term load forecasts for HR 18 include the estimates provided by end-use models REEPS, COMMEND and INDEPTH for comparison to the forecasts produced by Hydro's current models.

RECOMMENDATION: That for HR 18, Ontario Hydro provide a study estimating both operating and capital costs on a unit energy basis for scrubbers at Nanticoke, Lakeview and Lambton. This cost, on a unit energy basis, should form the basis for social cost adder for both secondary AND primary sales.

3.0 FUEL AND FUEL RELATED AND SECONDARY SALES

Ontario Hydro's forecasts of fossil and hydraulic production are appropriate at the time of the Ontario Energy Board HR 17 hearings for 1989.

RECOMMENDATION: the social cost adder should be considered for a funded account either to mitigate acid gas effects at point of impingement or to reduce acid gas emissions at the source.

The reopening of Lennox was the economic solution to maintain reliability in eastern Ontario in 1987 because it was the only solution to the problem.

RECOMMENDATION: That Ontario Hydro evaluate basing the eastern Ontario buy-back rate in the near term on the Total Unit Energy Cost of Lennox. Ontario Hydro should report to the Ontario

Energy Board on both the economics and system reliability impact of this alternative, both from Hydro's perspective and the perspective of the electricity ratepayers of Ontario.

RECOMMENDATION: That Ontario Hydro report on their export/import pricing policy for buying and selling electricity and that this information be used as an indicator for the evaluation of the appropriateness of the buy-back rate level for parallel generation in Ontario.

RECOMMENDATION: That Hydro study and report to the Ontario Energy Board on pricing electricity for export on the basis of Total Unit Energy Cost and defining firm or interruptible contracts on the basis of whether Hydro or the buying utility is carrying the reserve margin capacity.

HYDRO'S ACTIVITY IN CO-GENERATION AND PARALLEL GENERATION AS A RESULT OF RECOMMENDATIONS BY ONTARIO ENERGY BOARD IN HR 16

In HR 16, Hydro predicted 330 MW of parallel generation by the year 2000. For HR 17 the prediction is about 500 MW by 1992 and 1000 MW by the year 2000. However, Ontario Hydro has 686.4 MW of projects in-service, committed or proposed as of March 30, 1988.

The Consistent Energy Set 88-4 indicates 59 MW parallel generation is forecast to supply 158 GWh in 1988, which is more than the 15 GWh supplied by Hydro's combustion turbine units in that year. In 1989, 220 MW of parallel generation is forecast to supply 456 GWh as compared to 250 GWh by Lennox in that year. In 1992, 500 MW of parallel generation is forecast to supply 1466 GWH which would be greater than the 1349 GWh supplied by Ontario Hydro's west coal-fired system.

RECOMMENDATION: There are factors developing which may result in an opportunity requiring a development target by Hydro of more than 3000 MW of parallel generation in the next 2 to 3 years.

RECOMMENDATION: That the evidence in HR 17 underscores the need for a hearing reference from the Minister of Energy to the Ontario Energy Board in the areas of buy-back rates, standardization of contracts, arbitration, interconnection standards and wheeling and that such a hearing is still as necessary as it was perceived to be in HR 16.

RECOMMENDATION: That Hydro should review their approval process and explicitly identify at what step a letter of intent is issued and at what step the contract will be signed.

RECOMMENDATION: That Ontario Hydro's proposed Parallel Generation Advisory Council undertake as its first order of business, the completion of a well organized, equitable, standard form contract and report to the Ontario Energy Board on the final form of this contract. If necessary, the Ontario

Energy Board could then arbitrate any outstanding issues in HR 18. Alternatively, it is recommended that the Minister of Energy give the Ontario Energy Board a hearing reference to decide the standard form contract along with the buy-back rate structures and the actual buy-back rate.

RECOMMENDATION: that the Ontario Energy Board be given binding authourity to set contracts, buy back rate structures and rates either by act of legislature or through a hearing reference letter from the Minister of Energy.

RECOMMENDATION: That Ontario Hydro study other approaches to prevent small hydro developers from flipping properties to gain higher buy-back rates. A brief report on the advantages and disadvantages of different approaches should be presented to the Ontario Energy Board for HR 18.

RECOMMENDATION: That Hydro consider another title for the Non-utility Generation Division to reflect the change in culture at the organization as suggested by Cresap. Suggestions include: Parallel Generation Division, Contract Generation Division, Co-operative Generation Division, etc.

RECOMMENDATION: based on the redeployment concepts of CRESAP, that a consolidation be considered of the present parallel generation department with Hydro's Interconnections Department (in the Power System Operations Division, Production Branch).

RECOMMENDATION: That system transmission/distribution engineers with experience on 'a variable impedance bus with generation' be redeployed in the consolidated parallel generation division as transmission/distribution design groups located at both the head office and regional levels to address the unique distribution engineering challenges associated with parallel generation.

RECOMMENDATION: That Ontario Hydro's new parallel generation division do a study on the feasibility of modifying sub-sections of the distribution system which have sufficient internal parallel generation to support islanding. This study would include evaluating other utilities' experience where islanding has been intentionally designed into the distribution system, an assessment of customer benefits such as improved system reliability within that islanding distribution subsection, methods for resynchronization, and the costs for modification of distribution sub-sections in Hydro's system to facilitate islanding while maintaining safety and power quality. The resulting report should be submitted to HR 18 for review.

RECOMMENDATION: that the buy-back rates be set at a level to stimulate cogeneration investment in and of itself, without the need for low interest loans from Ontario Hydro to make a project viable.

In Ontario, the electricity system has been established around concepts of "power for the people", so the interests of the people of Ontario are paramount. Consequently, analysis of parallel generation buy-back rates must be addressed from the perspective of the people (ratepayers/end-users) rather than the utility because of the unique political environment concerning electricity development in this province. Therefore, the Avoided Cost analysis from the perspective of the ratepayers must include comparison of the full capital cost for Ontario Hydro's new and under construction generation with proposed new parallel generation. In this context, it is submitted that the fair comparison should be made on the basis of Total Unit Energy Cost. This approach captures both the capital component (including capitalization of interest during construction) and the rate based comparison because it is expressed in dollars of the year (nominal dollars).

Ontario Hydro's avoided cost methodology and incremental energy cost and incremental capacity cost methodology are reviewed and critiqued.

RECOMMENDATION: That fair, standard buy-back rates be set on a regional basis derived from the region's **PROXY PLANT TOTAL UNIT ENERGY COST** of either the most recently installed generation in operation in that region, or new generation under construction.

Projected 1989 Cost of Power presently used by Ontario Hydro to set buy-back rates:

$$\frac{\text{Revenues}}{\text{Total Primary Energy}} = \frac{\$6{,}136\text{ M}}{133.2\text{ TWh}} = 4.61\text{ cents/kWh}$$

which yields 4.61 cents/kWh x 0.85 = 3.92 cents/kWh for 65% capacity factor. The advantages and disadvantages of this approach are discussed.

RECOMMENDATION: That Ontario Hydro adopt a natural gas policy which encourages private sector investment in cogeneration equipment through a short and medium term buy-back rate strategy. In this fashion, Ontario Hydro could conserve their capital resources while encouraging the natural gas industry to expand their pipeline network to supply the additional demand of the private sector cogenerators.

IPPSO proposes a Cost of Power and Borrowing Rate as a basis for short term (3-5 year) cogeneration capitalization contracts as follows:

$$\frac{\text{Total 1989 Revenues + Borrowing}}{\text{Total 1989 Sales}} = \frac{\$9{,}236\text{ M}}{126.9\text{ TWh}} = 7.28\text{ cents/kWh}$$

RECOMMENDATION: That Hydro study and report on using the Cost of Power and Borrowing formula above (or an alternative) as a basis for short term buy-back rates for cogeneration. Implicit in this study is a cogeneration buy-back rate in the medium term reflecting only fuel and maintenance costs after completion of the short term capitalization contracts. Also, because the natural gas industry would substantially benefit from this approach, they may be willing to share some of the front-end capitalization risk in their rate structure. While this option would conserve Hydro's capital, increase generation resources, system reliability, flexibility and diversity, the study should estimate the impact on revenue requirement over the term of the policy and whether Hydro's ratepayers would be indifferent to the impact on Hydro's rates in the near term.

RECOMMENDATION: That the 65% capacity factor criterion for the premium standard and fixed renewable buy-back rate be dropped from parallel generation contracts under 5 MW over the near term. It would be reinstated if and when there is evidence that Ontario Hydro's system reliability is being adversely affected by parallel generators under 5 MW not producing above a 65% capacity factor.

RECOMMENDATION: That Hydro study and report to the Ontario Energy Board on the design of remote community contracts and buy-back rates such as is used by B.C. Hydro where the parallel generator's cost of service at a remote site is subtracted from B.C. Hydro's cost of service at that site and the difference is split 50/50 between the parallel generator and the utility (thus both the ratepayers and the parallel generator benefit equally).

RECOMMENDATION: That the Ontario Energy Board and Ontario Hydro review and comment on the Rate Structure suggested by IPPSO in the following table:

IPPSO SUGGESTED 1989 PARALLEL GENERATION BUY-BACK RATES

A) STANDARD REGIONAL UNDER 5 MW POWER PURCHASE RATES:

TARGET: RATES IN EFFECT FOR THREE YEARS OR UNTIL 1000 MW OF CONTRACTS HAVE BEEN SIGNED IN TOTAL UNDER THIS STRUCTURE, WHICHEVER COMES FIRST.

	COMPARISON COST OF SERVICE	FIRST APPROXIMATION BUY-BACK RATE (All Capacity Factors)
1) NORTHEASTERN AND NORTHWESTERN REGIONS		
TUEC Atikokan		
1989 at: 40% ACF	14.8 cents/kWh	11 cents/kWh
80% ACF	8.6 cents/kWh	
2) CENTRAL, WESTERN AND GEORGIAN BAY REGIONS		
TUEC Darlington		
1989 at: 40% ACF	12.5 cents/kWh	6.5 cents/kWh
80% ACF	6.5 cents/kWh	
3) EASTERN REGION		
TUEC Lennox		
1989 (at .250 TWh)	10.8 cents/kWh	10 cents/kWh

B) 1989 SPECIAL CLASSIFICATION BUY-BACK RATES:

1) SHORT TERM (3-5 YEAR) (COPAB) COGENERATION CAPITALIZATION RATE (all regions, no capacity limits)		7.28 cents/kWh

TARGET: RATES IN EFFECT FOR THREE YEARS OR UNTIL 3000 MW OF CONTRACTS HAVE BEEN SIGNED IN TOTAL UNDER THIS STRUCTURE, WHICHEVER COMES FIRST.

2) 1989 RURAL POWER DISTRICT UNDER 5 MW RATE	8.43 cents/kWh	7.8 cents/kWh
3) REMOTE COMMUNITIES		
1989 COST OF SERVICE (OM&A & fuel only)	rail & road access	27.4 cents/kWh
	air access	42.6 cents/kWh

4.0 FUEL CONTRACTS

Coal is 16.7% and uranium is 83.3% of the total long term fuel supply contracts value of $11,462 million. This represents a long term financial commitment of five to one of uranium fuel over coal. Somehow, Hydro has to use all that uranium. As a result of this imbedded fuel contract bias against non-nuclear generation, the overall revenue requirements of Hydro may, as a practical matter, be higher if any option other than nuclear is chosen.

5.0 OM&A GENERAL

It will cost about $115 million in 1989 to maintain CANDU capability, of which Hydro's Design and Construction Branch will be paying about $70.4 million, or 61%.

RECOMMENDATION: Since Ontario Hydro's ratepayers are paying $70 million in 1989 to maintain CANDU capability, that Ontario Hydro study and report to the Ontario Energy Board on consolidation of these expenses either internally or externally to Ontario Hydro. That is, either Hydro absorb the entire CANDU capability and treat it as an internal OM&A cost, or that Hydro enter into an agreement with AECL Candu-ops and sub-contract the entire nuclear work to that agency.

Ontario Hydro adds Basic Unit Energy Cost (BUEC) - a dollars of the year series - to Operation Maintenance and Administration Unit Energy Cost (OMAUEC) - a constant dollar series - to calculate the Production Branch's performance measure, the Production Unit Energy Cost (PUEC) in dollars of the year.

It is argued that it is unacceptable practice to convert and add "constant dollar series" to "dollars of the year" series because the fundamental structure of each series is different.

RECOMMENDATION: That all productivity/performance measures submitted by Hydro to the Ontario Energy Board be in 'dollars of the year' series, because it is this format which is most appropriate to evaluate from the point of view of rate making purposes.

RECOMMENDATION: That Hydro provide the TUEC's on a station by station basis as part of their base filing for all future Ontario Energy Board hearings. The TUEC is to be in a dollars of the year series.

RECOMMENDATION: That the two pressure tubes chosen to be removed from Bruce Unit 2 in the summer of 1988 for laboratory testing for hydrogen/deuterium uptake, should have an Equivalent Full Power Rating of at least ten years, or as close to ten years as possible.

6.0 CAPITAL PROGRAM AND DEPRECIATION

Since it is not Ontario Hydro's corporate policy that accountants necessarily sit on the Depreciation Review Committee, a more appropriate name for the committee would be: "Service Life Review Committee" because this nomenclature would be more congruent with its technical stature.

RECOMMENDATION: that fuel channel removal, irradiated fuel disposal and decommissioning cost provisions be deposited in a funded account rather than expensed as depreciation. In the case of the irradiated fuel disposal provision, this activity would more closely correspond to the assumptions used in calculating that provision.

RECOMMENDATION: That Hydro's cost provision for spent fuel disposal should be increased by a factor of two to eight.

RECOMMENDATION: That Ontario Hydro's new environmental division apply for an Environmental Assessment hearing for their on-site interim fuel channel high level waste storage facilities and for the decommissioning of any of their nuclear reactors.

1989 COSTS FOR PICKERING UNIT 3 - RETUBING VS. SAFE STORAGE

A) COSTS FOR PICKERING UNIT 3: RETUBING

Retubing Cost (escalated dollars):	$250 Million
OM&A to restore good operating practice:	$? M and seven years
New process control computers and relays:	$? M

B) COSTS FOR PICKERING UNIT 3: SAFE STORAGE

Surveillance: $3.5 million (based on cost for Safe Storage and Monitoring of Gentilly 1)

Undepreciated balance to be amortized over 10 years: $87.4 M

Assumptions:
- in-service, 1972
- capital cost : $152 million
- annual depreciation expense: ($152 M/40 years) = $3.8 M/year
- depreciated to date: ($3.8 M x 17 yrs) = $64.6 M
- undepreciated balance: $152 M - $64.6 M = $87.4 M

The above outline for Pickering Unit 3 suggests that it may be cheaper from a short term expense and capital borrowing viewpoint to put Pickering Unit 3 into Safe Storage Mode in 1988 for retubing after 1995.

RECOMMENDATION: That Hydro investigate and report to the Ontario Energy Board on different strategies for coping with the borrowing burden should reactors require retubing earlier than expected.

RECOMMENDATION: That Ontario Hydro report to the Ontario Energy Board in detail on the pressure tube problem as described in Major Recommendation 2 on page vi of "The Safety of Ontario Hydro's Nuclear Power Reactors - A Technical and Scientific Review" (Report ot the Minister of the Ontario Nuclear Safety Review, February 29, 1988). This report should describe in layman's language the current understanding of hydrogen/ deuterium phenomena in zirconium and its effect on the integrity of pressure tubes. The report should describe the potential impact of a major pressure tube failure.

RECOMMENDATION: If the testing of pressure tubes in Bruce Unit 2 indicates higher than expected deuterium uptake, that Hydro evaluate defering construction of the Bruce - Longwood segment of the southwestern Ontario Transmission Corridor Plan 1 to ease pressure on their borrowing requirements.

RECOMMENDATION: If earlier than expected retubing is required on Hydro's CANDU reactors, then Hydro should establish more ambitious parallel generation in-service targets to cover some of the resulting shortfall in generation.

7.0 BORROWING PROGRAM

Ontario Hydro's 1987 financing relied heavily on two and five year short term bonds.

Hydro is proposing to borrow $3,407 million in 1988, $3,100 million in 1989 and $2,512 million in 1991. Ontario Hydro has $2,031 million dollars in bond principal maturing in 1991 and $2,007 million dollars in bond principal maturing in 1992. This means that in 1991, Hydro's maturing principal will correspond to 80.8% of their total borrowing in that year.

Caution is urged, particularly if the bond marketplace offers Hydro acceptable interest rates only for 2 or 5 year maturities. If Hydro can only get access to short term bonds at reasonable interest rates, then they ought to consider being more flexible and look at shifting financial resources into corporate business activities with a two to five year pay-back to match the terms of these bonds.

In 1988 $692 million and in 1989 $733 million in interest will be capitalized for Darlington. This 1989 $733 million capitalized interest payment for Darlington is equivalent to the TOTAL capital cost of TWO dome stadia. It is this component which results in the capital cost burden growing at an enormous rate.

RECOMMENDATION: If the AECB Probablistic Risk Assessment licencing process implies further delays in Darlington's in-service dates, that Hydro consider immediately transferring the interest cost for construction of these assets to the operating statement. This would be phased in over a four year period for rate smoothing. (Note the proposed 1989 rate increase of $310 M or 5.5%, would become a total of $493.25 M or a 1989 rate increase of 8.75%). Since this is not a generally accepted accounting principle, it may require a special act of the Ontario legislature to enable Hydro to do this transfer.

8.0 FINANCIAL POLICY

RECOMMENDATION: That for HR 18, Ontario Hydro issue to the Ontario Energy Board a concise statement in simple, layman accounting language of the Generally Accepted Accounting Principle which is applied by Hydro in determining the depreciation period of their CANDU fuel channel pressure tubes, based on the pressure tubes' actual in-service life as an asset producing revenue for the company.

9.0 ENERGY MANAGEMENT

No submissions.

10.0 NET INCOME

RECOMMENDATION: That if Hydro's net income for 1988 and 1989 comes in above 100% of their target, that the excess net income be directed to increasing the amount of Hydro's long term debt retirement from the $1,794 million forecast for 1989 and $1,870 million forecast for 1988. The primary purpose of this recommendation is to reduce the roll-over of the $1,159 million of debt from 1988 to 1991 that Hydro proposes in HR 17.

11.0 COST ALLOCATION

RECOMMENDATION: That the Ontario Energy Board oppose the capacity/energy split freeze until the year 2001 that is proposed in the Letter of Understanding. Instead, the parties should consider an alternative which allows Hydro to adjust the capacity/energy split by 1% in any year. In this circumstance, Hydro would adjust the rate by more than 1% in any given year only with the written agreement of the parties. Also, if a trend of 3% change in one direction should develop over a period of three or more years, then Hydro could only continue on that trend with the written agreement of the parties.

12.0 RATE DESIGN

Ontario Hydro's proposed direct customer rate structures and diversity adjustment are appropriate.

The preliminary results of the Time of Use Rate Experiment which applies Time of Use rates at the retail level indicate that the Municipal Electric Association has reasonable grounds for negotiating optional Time of Use Rates for municipal utilities.

Only one of the rate schedules tested indicated a payback on the meter in under two years based on savings to the customer.

Hydro should test inverted block retail rates as an alternative to Time of Use rates, especially for retail baseboard electric heating customers.

Hydro should also study the feasibility of correlating their summer and winter rate periods with the change in clocks from standard to daylight savings time.

RECOMMENDATION: That it is the customer who determines the effectiveness of a retail Time of Use rate structure. Therefore, Ontario Hydro must offer the municipal utilities greater support in structuring their retail Time of Use or inverted block rate schedules to ensure they will be cost-effective when implemented.

RECOMMENDATION: That Hydro not implement their Thermal Mechanical Pulping Special Classification rate.

13.0 POLICY

IPPSO supports the principals of the "Corporate Reorganization and President's Initiatives" and the Cresap report.

14.0 OTHER ISSUES

IPPSO submits that the evidence before the Ontario Energy Board is insufficient for IPPSO to translate its recommendations herein into dollar adjustments to the proposed 1989 rate increase. Rather than guess at what the adjustment should be, the Independent Power Producers of Ontario would prefer to make no submissions in this regard.

Cost Award Process

This process should be modified whereby an agreement is reached between each intervenor and the Ontario Energy Board prior to the hearing as to what expenses and wage rates will be recognized (either by negotiation or fixed rate schedule).

This contributes to maintenance of orderly public accessibility to the Ontario Energy Board hearings within the mandate of the Ontario Energy Board. HR 17 demonstrated that the hearings can be completed on time and within schedule. When this fact is combined with intervenors' rates and legitimate expense items agreed to prior to the start of the hearing, these costs could no longer be classified as "uncontrollable".

Municipal Electric Association

In the matter of a Reference respecting Ontario Hydro

HR-17

FINAL ARGUMENT

Executive Summary

F/106

The Municipal Electric Association's overall approach, regarding Ontario Hydro's proposed rate increase, was to seek savings in Hydro's various budgets without jeopardizing reliability of service. In view of the magnitude of Hydro's debt, the Municipal Electric Association recommended that the savings should then be directed towards debt retirement.

The Municipal Electric Association also made a variety of recommendations in policy and other areas: some of these will have rate impacts in future years while others are submitted to hopefully impove some of Hydro's operations.

The net effect of the recommendations is a recommended rate increase of 4.9% as compared to Hydro's proposal of 5.5%. The following is a summary of the recommendations.

CHAPTER I - ECONOMICS

I.1 Canadian Dollar Forecasts

RECOMMENDATION: 1. Hydro increase its Canadian dollar forecast to 81 ¢ for 1988

Reason: The Canadian dollar has gained considerable strength since the time of the original submission. The impact of this recommendation is to reduce Hydro's 1989 revenue requirement by $67 million relative to the main submission; for 1988, net income improves by $81 million.

I.2 Forecasts of Remaining Economic Variables

RECOMMENDATION: 1. Hydro's updated forecast of all economic variables (except the exchange rate) be accepted.

Reason: Hydro's updated economic forecasts are broadly consistent with Dr. de Bever's and are based on the most up-to-date data. The impact of this recommendation is to increase revenue requirement by $7 million relative to the main submission.

I.3 Effect of Free Trade on Economic Variables

RECOMMENDATION: 1.Hydro's assessment of the effect of free trade on the various economic variables for 1989 be accepted.

Reason: The bulk of the impact of the Free Trade Agreement will be seen over a long-term period, it will therefore only have a limited impact on 1989 rates. All forecasts of the effects of free trade should be considered preliminary at best.

I.4 Sensitivity of Revenue Requirement to Changes in Planning Assumptions

RECOMMENDATION: 1. Hydro's revised exchange rate sensitivity resulting from the Special Hedging Program be accepted.

Reason: The major downward revision to the exchange rate sensitivity resulting from Hydro's Special Hedging Program has substantially reduced Hydro's foreign exchange exposure over the next several years.

RECOMMENDATION: 2. Hydro provide evidence of the approximate accuracy of its sensitivities at next year's hearings.

Reason: The sensitivities are used in an important way to arrive at revenue requirement; yet if the actual changes in Hydro's costs are not consistent with those predicted by using the sensitivities, then they are of limited value.

CHAPTER II - PRIMARY SALES

II.1 Hydro's Load Forecasting Process

RECOMMENDATION: 1. Hydro's methodology and process for arriving at its short term load forecast be accepted.

Reason: Hydro has made significant improvements in its load forecasting process in recent years.

RECOMMENDATION: 2. Hydro be encouraged to continue development of its end-use forecasting models.

Reason: End use models are useful in establishing local as well as province-wide load growth rates. Moreover, given the poor performance of the preventative maintenance program and the relatively rapid load growth of certain municipal utilities, local load growth information would be helpful in transmission function planning as well as preventative maintenance planning.

II.2 Primary Sales Forecast

RECOMMENDATION: 1.Ontario Hydro's forecast growth in sales be increased to 5.0% (133.1 TW.h) for 1988 and to 3.5% (137.8 TW.h) for 1989.

Reason: Hydro's revised forecasts for the cumulative growth in sales for 1988 and 1989 understate the most likely outcome given that, monthly sales continue to be strong and Hydro's customer surveys forecast a total uncompounded growth of 8.3% for 1988 and 1989 in comparison to Hydro's update of 7.7% for the two years. The impact of this recommendation is to reduce Hydro's 1989 revenue requirement relative to the original submission by $97 million.

II.3 Effect of Rate Reform and Demand Management On Short Term Load Forecast

RECOMMENDATION: 1. Hydro's forecast of the impacts of energy management and rate reform on the short term forecast not be accepted because they appear to be inconsistent with Energy Management Branch targets. Furthermore, Hydro should reconcile the apparent inconsistency.

Reason: Hydro has developed a set of forecasts which attempt to incorporate the net effect of incentive programs on the short term load forecast. Hydro's forecast of annual efficiency improvements in MW's arising out of efficiency improvements and time-of-use rates outlined in Exhibit 2.1.5, forecasts only a 5 MW reduction for efficiency improvements, while the Energy Management Branch target for efficiency improvements for 1989 is 90 MW's.

II.4 Effect of Free Trade on Primary Sales

RECOMMENDATION: 1. Ontario Hydro's assessment of the impact of the Free Trade Agreement on primary sales be accepted.

Reason: The Free Trade Agreement has a limited effect on primary sales for 1989. Also, Hydro has put forward a plausible assessment of the long term increase in primary sales due to the Free Trade Agreement resulting in a 3.2% increase in electricity sales over the next decade.

CHAPTER III - FUEL, FUEL RELATED AND SECONDARY SALES

III.1 Hydraulic Production

RECOMMENDATION: 1. Ontario Hydro's forecast hydraulic production for 1989 be accepted.

Reason: The Municipal Electric Association has consistently argued that Hydro underestimates hydraulic production. However, given the current drought conditions, the Municipal Electric Association believes the estimated production should not be raised upwards.

III.2 Reopening of Lennox

RECOMMENDATION: 1. Ontario Hydro continue to monitor the operation of Lennox #1 and #2 and present current information on the use and associated costs of these units again in HR 18.

ason: The primary reason for the usage of Lennox #1 and #2 is for transmission support. Moreover, the fuel and OM&A costs of Lennox #1 and #2 have exceeded any notional economic benefit of returning these units to service. Thus, the Municipal Electric Association believes that Hydro should continue to present information to the Board to justify the continuing operation of Lennox #1 and #2.

RECOMMENDATION: 2. Ontario Hydro should pursue the option of purchasing energy from Hydro-Quebec as an economical substitute for the transmission benefit provided by Lennox #1 and #2.

Reason: On an economic basis, it may be more feasible for Ontario Hydro to secure the necessary transmission support from Hydro-Quebec: this would allow for the removal of the two Lennox units from service.

III.3 Power Purchases

RECOMMENDATION: 1. Ontario Hydro continue and intensify its attempts to reach mutually-beneficial contracts for the purchase of power from Hydro-Quebec and Manitoba Hydro.

Reasons: Ontario Hydro transactions with Hydro-Quebec are on a day-to-day basis, rather than on the basis of long term arrangement. Such arrangements are by their very nature subject to considerable uncertainty and fluctuation. Ontario Hydro should endeavor to achieve economically and operationally advantageous purchase from neighbouring provinces allowing them to meet unexpected demands while at the same time meeting legislated acid gas emission levels.

III.4 Fuel Contracts

RECOMMENDATION: 1. Ontario Hydro continue to monitor the status of its uranium supply contracts.

Reason: Ontario Hydro continues to experience an oversupply of uranium.

RECOMMENDATION: 2. **A thorough analysis of the value of the advances for uranium supply and their accounting treatment be undertaken and presented to this Board for review.**

Reason: The valuation of the uranium supply advances by reference to the cost of replacement coal fired generation, rather than by reference to the market price of uranium, is questionable. Given that, Ontario Hydro may soon be in a position to cancel the existing contracts for the supply of this commodity, the value of its advances for uranium should be subjected to careful and continuing consideration and an analysis of value presented for consideration at the next public hearing.

III.5 Nuclear Production

RECOMMENDATION: 1. The forecast reliability indices of all units, **except those at Bruce B, be accepted notwithstanding recent pressure tube findings at Pickering #3 and #4.**

Reason: Reliability indices have already been reviewed by Ontario Hydro in light of recent retubing findings, and a Nuclear Plant Life Assurance program has already been put in place to ensure reliability.

RECOMMENDATION: 2. **The forecast nuclear production for 1989 should be increased by .24 TWh as a result of increasing the** reliability factors for Bruce B.

Reason: Ontario Hydro has consistently underestimated the reliability factors for Bruce B. The impact of this recommendation is to reduce the 1989 revenue requirement by approximately $4.3 million.

III.6 Acid Gas Emissions

- see Chapter VI.7

III.7 Secondary Sales (including free trade) for Fiscal 1989

RECOMMENDATION: 1. **Hydro's forecast for Secondary Sales for 1989 be accepted.**

Reason: Hydro has forecast total secondary sales for 1989 of 6,500 GW.h at an average price of 32.9 dollars per MW.h., which is consistent with current sales.

RECOMMENDATION: 2. Hydro should bargain harder in the area of the price of secondary sales.

Reason: For 1988, Hydro achieved almost 50 per cent of the net revenue forecast during the first quarter. This is evidence that Hydro should be able to obtain higher prices for its secondary sales.

RECOMMENDATION: 3. Hydro's assessment that the effect of free trade on secondary sales is negligible in 1989 be accepted.

Reason: The Free Trade Agreement will not affect Ontario electricity pricing policies. Sales volumes are unlikely to be affected in near term.

III.8 Coal Inventories

RECOMMENDATION: 1. Hydro reduce its reported coal inventory by 235 Gg. as of March 31, 1989.

RECOMMENDATION: . Hydro report future forecast coal inventories net of any unusable amounts.

RECOMMENDATION: 3. The asset value of the unusable coal be adjusted to more accurately reflect its worth and the resulting loss in value written off in 1988.

ason: 235 Gg. of coal have been identified as "unusable". The impact of removing 235 Gg from reported coal inventories results in a $1.6 million increase in revenue requirement. For purposes of charging fuel costs to customers usable inventories are the relevant quantity.

CHAPTER IV - OM&A AND CAPITAL

IV.1 Growth in OM&A Costs and Hydro's Business Planning Process

RECOMMENDATION: 1. Hydro continue its program of integration of its business planning process, propose specific targets and goals for the further changes, and report on these at HR 18.

Reason: Internal and external reviews identify shortcomings within the business planning process. The Cresap overview study identified Hydro's business planning process as an area where improvements can be made.

RECOMMENDATION: **2. The branch level 5% variational analyses not be used for purposes of establishing OM&A budgets at this time but that this analysis be improved to the point where it can be used as one of the tools for assessing OM&A budgets.**

Reason: Hydro's variational analysis is of insufficient quality to allow it to be the basis for OM&A decisions on budgeting.

IV.2 Staff Levels

RECOMMENDATION: **1. Hydro reduce staff levels by at least 10%.**

Reason: Hydro employs about 30,000 regular and non-regular staff; the Cresap overview study has identified a 10% surplus at Hydro. A detailed review of part of the Production Branch identified a 15% surplus.

RECOMMENDATION: **2. Hydro provide specific five year time profiles of targets for staff levels (rather than changes in staff levels). Progress on achieving the targets should be reported at HR 18.**

Reason: Forecasts of staff levels are critical as benchmarks for future assessment of the success of Hydro's program to deal with excess staff and inappropriately deployed staff.

RECOMMENDATION: **3. Hydro increase its targets for OM&A savings and provide specific five year time profiles of OM&A costs by Branch at HR 18.**

Reason: Hydro estimates of savings are low given the volume of excess staff. With labour costs of $1.3 billion in 1988, a 10% reduction in staff implies a potential long term target saving of $130 million per year.

RECOMMENDATION: **4. Hydro increase the 1989 impact of the Cresap overview study from $5 million to $15 million.**

Reason: Given that implementation of Cresap recommendations will be in full swing in 1989, there should be greater savings involved. The $5 million figure cited by Hydro is too low. The impact of these recommendations is to decrease revenue requirement for 1989 by $15 million.

IV.3 Production Branch

RECOMMENDATION: 1. Hydro immediately pursue improvements in nuclear reliability management systems.

Reason: Hydro internal studies of leading indicators to performance in the nuclear program and the Cresap overview study identify several shortcomings - these areas including problems in technical support, documentation, training and preventative maintenance. The impact of this recommendation is to increase revenue requirement for 1989 by $44 million. For 1988, the impact of this recommendation is to reduce net income by $10 million.

RECOMMENDATION: 2. Hydro redeploy staff more rapidly and to a greater degree in order to fulfil its staff needs in the Nuclear Hiring Program.

Reason: There is significant excess staff at Hydro. Given the urgent need for staff in the nuclear area, Hydro's redeployment program should be accelerated to meet the need. The impact of this recommendation is to reduce revenue requirement for 1989 by $23 million. (The impact of this recommendation for 1988 is to increase net income by $8 million).

RECOMMENDATION: 3. Hydro develop improved performance measures within the Production Branch.

Reason: Cresap has identified a corporate-wide deficiency in the area of useful performance indices.

IV.4 Wages and Salaries

RECOMMENDATION: 1. Hydro bargain harder with representatives of its staff associations and unions in arriving at wages and salaries.

Reason: Hydro has been consistently paying its staff significantly above the average of a group of highly regarded companies with similarly motivated and accomplished employees. Hydro can compensate its staff with wages more commensurate with those in similar organizations while maintaining its historical level of competency.

RECOMMENDATION: **2. Hydro continue its efforts to realign its wages to the community average as quickly as possible.**

Reason: There is a need to bring salaries closer to the community average. Hydro's final offer of 3.9% given during arbitration (compared to the Society's 4.1%) does not properly signal the need to bring Society salaries closer to the community average. ("Community" is defined as a group of companies comparable with Ontario Hydro).

RECOMMENDATION: **3. Hydro narrow the differential between Society salaries and the 15 company survey by 2% for 1989.**

Reason: Society salaries are 10.8% above the mean of the comparison group.

RECOMMENDATION: **4. Hydro narrow the differential between OHEU staff and the 50 company survey by 2% in its negotiations in 1989-1990.**

Reason: OHEU staff receive wages about 8%-10% above community averages.

RECOMMENDATION: **5. Hydro not make wage comparisons with other Canadian utilities for negotiating purposes as they are inappropriate and need not be made.**

Reason: Such comparisons are inappropriate for the following reasons:

i the economies in other provinces are very different from Ontario;

ii there are different forces in the labour market across Canada;

iii and because Hydro recruits most of its staff in Ontario, it must compete with corporations in Ontario for the same skilled labour.

RECOMMENDATION: 6. Hydro negotiate a nonuniform wage policy with Society represented staff for 1989 and with OHEU represented staff for 1990.

Reason: Uniform pay may be contributing to Hydro's higher than average wages because Hydro may have to offer more in certain regions to attract staff and consequently pay all other employees across the province the same amount.

IV.5 Fuel Versus OM&A Trade-off

RECOMMENDATION: 1. Ontario Hydro's evidence on the relationship between OM&A and fuel and fuel-related costs not be used for purposes of setting OM&A budgets.

Reason: Ontario Hydro has filed evidence on the relationships between OM&A and fuel and fuel-related costs to demonstrate that increased OM&A expenditures result in fuel and fuel related cost savings. Yet, the estimates of the relationships are insufficiently precise for budgeting purposes.

IV.6 Preventative Maintenance

RECOMMENDATION: 1. The 1989 Regions Branch budget be increased by $15 million to allow acceleration of Hydro's program to return to acceptable preventative maintenance levels and restore transmission reliability.

Reason: Recent expenditures in this area are wholly inconsistent with Hydro's Business Plan, given the fact that Hydro has decreased expenditure on transmission maintenance in real terms and that expenditure on preventative maintenance has also decreased. A $15 million increase is consistent with Hydro's stated goal of reversing the declining trends and restoring the systems to desirable standards.

RECOMMENDATION: 2. Hydro report on the appropriateness of its maintenance standards at next year's hearings.

son: There is insufficient evidence before this Board at this time on the appropriateness of Hydro's transmission system standards.

IV.7 Property Exchange Agreement

RECOMMENDATION: 1. Hydro's report to this Board next year on the progress of the plans for the development of 5000 Yonge Street and on its plans for the interim accommodation of Hydro staff.

Reason: This recommendation stems from the fact that there was no evidence presented at this hearing indicating what Hydro's plans were for the 5000 Yonge Street property. There is insufficient evidence to indicate that Hydro would have space ready by the time it is required to vacate 610/620 University Avenue.

CHAPTER V – BORROWING PROGRAM

V.1 Assessing Hydro's Borrowing Program

RECOMMENDATION: 1. Hydro's Treasury division increase communication with the Economics division.

Reason: It is imperative that the Treasury Division base decisions on sound economic principles. Hydro's Chief economist had not been sufficiently consulted on hedging strategy and maturity selection.

RECOMMENDATION: 2. Hydro follow the advice of its Economics Division and moderately increase emphasis on long term debt relative to short term debt at this time.

Reason: Mr. Rothman, Chief Economist of Ontario Hydro, testified that Hydro would benefit from an increased emphasis on long term markets since interest rates are at a relatively low level.

V.2 Purchasing Power Parity and Hydro's Hedging Strategy

RECOMMENDATION: 1. Hydro retain the Purchasing Power Parity value of the dollar as one of the major determinants of its hedging strategy.

Reason: Under PPP theory, goods bought in the U.S. should cost approximately the same as they would in Canada after taking into account the exchange rate. PPP is an important determinant of changes in exchange rates over the longer term and is, therefore, important for assessing long term hedges.

V.3 Hydro's Special Hedging Program

RECOMMENDATION: 1. Hydro report on the ex post financial benefits of Hydro's special hedging program.

Reason: While the special hedge of $1.3 billion was useful from an "insurance" point of view, it would still be useful to assess the financial benefits/losses flowing from the program.

RECOMMENDATION: 2. Hydro report on the depth of Canadian/U.S. dollar forward markets at next year's hearings.

Reason: Hydro apparently does not track such information. Such data would be useful for assessing the feasibility of potential hedges.

V.4 Treasury Division Productivity Performance Measures

RECOMMENDATION: 1. Hydro provide performance measures for its selection of debt issue maturity mix.

Reason: There are no specific performance measures that assess Hydro's performance in its selection of market mix. Given that maturity mix is one of the most important borrowing decisions that Hydro makes, Hydro should provide measures for assessing its maturity mix selection.

RECOMMENDATION: 2. Hydro perform a retrospective analysis of its market choice decisions, (Canada/U.S.).

Reason: Hydro has a vast amount of outstanding U.S. debt. Although in recent years Hydro has been borrowing almost exclusively in Canadian markets, it would be useful to do a retrospective analysis of Hydro's past market selection decisions. Such an analysis must take into consideration inflation, interest rates and foreign exchange effects. This would aid Hydro in determining the appropriateness of future market selection decisions.

RECOMMENDATION: 3. Hydro review performance measures used by the private sector in assessing functions performed by Treasury Division.

Reason: Hydro should review such measures since these measures may be applicable at Hydro.

RECOMMENDATION: 4. Hydro report on the Woods Gordon review of Hydro's Pension Management Program at HR 18.

Reason: The program is currently going under an external review.

CHAPTER VI - DEPRECIATION

VI.1 Provisions for Fuel Channel Removal Costs

RECOMMENDATION: 1. Ontario Hydro should reduce the contingency factor included in the provision for fuel channel removal related to Pickering #3 and #4 from 25% to 20%.

Reason: The pressure tube removal of Pickering #3 and #4 will require no more than a 20% contingency factor. The actual contingency factor for Pickering #1 and #2 was 24%. The higher contingency factor was necessitated by the removal of calandria tubes. Since this activity is not scheduled to take place for Pickering #3 and #4, a lower contingency is appropriate. Adoption of this recommendation will decrease the 1989 revenue requirement by $1.5 million.

RECOMMENDATION 2. Ontario Hydro institute a policy requiring the collection of fuel channel removal costs over a period ending when the original tubes are removed from service rather than one ending when the replacement tubes are placed in-service.

Reason: Collection of this provision over the shorter period will allocate costs to the customers who benefit from the tubes. Adoption of this recommendation will increase the 1989 revenue requirement by $20.1 million.

VI.2 Provisions for Decommissioning Costs

RECOMMENDATION: 1. Ontario Hydro increase the provision for decommisioning costs by 10% or such other amount as will be necessary to provide for the disposal of at least one additional set of pressure tubes for each nuclear unit.

Reason: In calculating future decommissioning costs, Hydro currently considers one set of pressure tubes. This approach is inappropriate since at least two sets will require permanent disposal. Adoption of this recommendation will increase the 1989 revenue requirement by $3 million.

VI.3 Provisions for Irradiated Fuel Disposal Costs

RECOMMENDATION: 1. Ontario Hydro's irradiated fuel disposal cost provision be accepted until the UFDC proposal is completed and reviewed.

Reason: The provision is based on a 1981 study. Ontario Hydro ahs indicated that such costs have increased, but it is not in a position to reach finalized estimates.

VI.4 Service Lives of Unit Components

RECOMMENDATION: 1. Ontario Hydro adopt an accounting policy which requires the depreciation of major components, such as tubes, to the date at which they are taken out of service, rather than to the in-service date of replacements.

Reason: According to Ontario Hydro's witnesses, tubes which are replaced are depreciated over the average service lives of the group of assets to which they belong rather than over their actual service lives. Thus, customers of Ontario Hydro are paying depreciation over a period when the asset being depreciated is of no discernable benefit to them. Adoption of this recommendation will result in a $1.8 million increase in the 1989 revenue requirement.

VI.5 Service Lives of Pressure Tubes

RECOMMENDATION: 1. Ontario Hydro review the estimated service lives of all pressure tubes at Pickering B, Bruce #3 and #4 and Bruce B carefully in light of its findings at Pickering #3 and #4 and Bruce #1 and #2 and in light of the upcoming inspections of additional pressure tubes, and report results of its findings to this Board during HR 18.

Reason: Given the high level of uncertainty about the service lives of pressure tubes, it would be prudent to review the estimated service lives of all pressure tubes.

VI.6 Demothballing Plans

RECOMMENDATION: 1. Lennox #4 not be demothballed at this time.

RECOMMENDATION: 2. A decision to demothball Lennox #3 not be made until after review of the economic justification of such an action at a subsequent public hearing.

Reason: Ontario Hydro has provided no evidence to clearly demonstrate the economic justification of Ontario Hydro's decision to return Lennox #4 to service. Given the fact that Lennox #1 and #2 appear to be uneconomical, the return to service of Lennox #4 is of doubtful utility and should not be undertaken. Adoption of these recommendations will decrease the 1989 revenue requirement by $4.1 million. No appraisal of the utility of re-opening Lennox #3 can be made at this time. Ontario Hydro has presented no evidence which justifies demothballing Lennox #3. No forecasts of the usage of Lennox #3 or #4 have been provided by Ontario Hydro.

VI.7 Acid Gas Emissions

RECOMMENDATION: 1. Ontario Hydro be commended for the success of the efforts the utility has made to meet acid gas emission standards.

Reason: Hydro's acid gas emissions are below legislated levels.

RECOMMENDATION: 2. Ontario Hydro undertake a detailed cost/benefit analysis of the installation and use of scrubbers and all alternative methods of emission control.

Reason: The Acid Gas Control Strategies report which assesses 72 low sulphur fuel options for Lambton, Nanticoke and Lakeview generating stations assumes that scrubbers will be the emission control technology utilized even though there may be lesser cost alternatives. The information presented by Ontario Hydro at this hearing about the costs of various acid gas emission control options appeared to be incomplete.

RECOMMENDATION: 3. Ontario Hydro should present the results of this study for examination at the appropriate forum prior to submitting a request for approval for the capital expenditure from Hydro's Board of Directors.

Reason: More information is necessary about the costs of emission control technology.

VI.8 Extension of Service Lives of Fossil Plants

RECOMMENDATION: 1. Ontario Hydro not extend the average service lives of its fossil fuel plants until such time as:

- **studies are completed to ascertain if all stations can be rehabilitated to meet future energy requirements; and**
- **a thorough study, including cost/benefit analysis, of all possible alternatives is carried out.**

Reason: The extension of the service lives of the fossil plants at this time would be premature; because:

a. the results of the DSPS, which will impact upon the use of existing resources, is still not completed;

b. engineering studies required to support the assumption that the lives of the stations can be extended do not yet exist;

c. it is not yet known whether the service lives can be extended economically.

The impact of this recommendation results in an increase of revenue requirement of $25 million.

RECOMMENDATION: 2. Ontario Hydro continue to amortize Lennox #3 and #4 at the rate of 5% of the capital cost of the units.

Reason: The depreciation review committee has elected to treat Lennox #3 and #4 as almost certainly destined to be returned to operation. Therefore, it changed the amortization rate of the component cost of these two units from 5% to 2.5%. The Municipal Electric Association argues that the Depreciation Review Committee's decisions was unsupported by the evidence. (Chapter VI.6). The impact of this recommendation results in an increase of $5 million in revenue requirement.

VI.9 Depreciation Review Committee

RECOMMENDATION: 1. At all times, Ontario Hydro's Depreciation Review Committee should include in its membership an individual with a qualified accounting designation who is a representative of the Financial Policy and External Reporting Department.

Reason: Given the responsibilities of the Depreciation Review Committee to make financial judgements, a qualified accountant would be a useful adjunct to the committee.

VI.10 Provisions for Future Expenditures - General

RECOMMENDATION: 1. Funds collected by Ontario Hydro through the inclusion in the Revenue Requirement of provisions for future expenditures for fuel channel removal, decommissioning and irradiated fuel disposal should continue to be used to finance operation of Hydro. Hydro's provision for such expenditures provides sufficient financial assurance of the availability of the funds in future years.

Reason: There is virtually no probability that Hydro will not be able to provide the necessary funds to meet future expenditures at the time they are required.

RECOMMENDATION: 2. The interest and escalation rates used by Ontario Hydro in the calculation of the provisions for fuel channel removal, decommissioning, and irradiated fuel disposal be accepted.

Reason: The various discount and escalation rates are roughly consistent with current economic forecasts and conditions.

RECOMMENDATION: 3. Ontario Hydro provide information about the amount of provision accruals, interest accrued and total estimated eventual disbursements during future public hearings.

Reason: Such information is necessary for an assessment of the reasonableness of Hydro's assumptions.

CHAPTER VII - NET INCOME AND ACCOUNTING POLICY

VII.1 Accounting for Petrosar

RECOMMENDATION: 1. Ontario Hydro recognize and expense the Petrosar settlement entirely in 1988.

Reason: If the entire Petrosar settlement cost of $150 million is recognized in 1988, the two applicable principles (according to Hydro) - rate smoothing and assumed recovery - can be achieved. The recognition in 1988 will not impact present or future rates. Costs in 1989 will decrease as a result. The impact of this recommendation will decrease 1989 revenue requirement by $39 million.

VII.2 Accounting for Cumberland Mine

RECOMMENDATION: 1. Ontario Hydro amortize the unamortized value of the investment in the Cumberland Mine over a three-year period, beginning in 1988.

Reason: The adoption of a shorter amortization period beginning earlier will enhance financial soundness and collectibility, and lessen carrying costs. The impact of this recommendation is to increase the 1989 revenue requirement by $10 million.

VII.3 Accounting Treatment for Heavy Water

RECOMMENDATION: 1. Hydro should provide information at HR 18 to allow this Board to determine the appropriate value of heavy water.

Reason: The Municipal Electric Association believes that it would be appropriate to depreciate the cost of in-service heavy water, less any residual value, over the service life of the related nuclear generating stations. Yet, because of the lack of data, the Municipal Electric Association is not in a position to calculate the impact of such a change in accounting policy on revenue requirement.

VII.4 Hydro's Financial Performance and Net Income

RECOMMENDATION: 1. Hydro's target net income be set on the basis of a variable interest coverage ratio of 1.10 on interest charged to operations and 1.60 on interest capitalized.

RECOMMENDATION: 2. Hydro's 1989 net income be set at $778 million being 100% of target for 1989 based on a coverage ratio combination of 1.10/1.60.

Reason: In both categories of interest, Hydro is using coverage ratios at the bottom end of the ranges it considers appropriate. Current forecasts of the debt ratio are approximately 3 percentage points worse than those expected at HR 12 when the policy was put in place. Net income is determined by balancing financial soundness against rate smoothing considerations. The above level of net income is appropriate in balancing off rate smoothness considerations against financial soundness goals. The impact of these recommendations is to increase revenue requirement by $94 million.

CHAPTER VIII - ENERGY MANAGEMENT

VIII.1 Energy Management Activities

RECOMMENDATION: 1. Hydro develop a critical path outlining specific implementation dates for demand side management initiatives over the next three years.

Reason: Hydro has not yet established a critical path for the implementation of demand side management initiatives. It is difficult to forecast impacts of demand management initiatives. More precise scheduling will be required in order to assess and incorporate the impacts of these initiatives.

RECOMMENDATION: 2. Hydro direct financial and capital incentives only to programs which will result in load reduction and/or load shifting.

Reason: 1989 will see higher load growth than previously forecast. It would thus seem prudent for Hydro to stress load shifting and load reduction programs.

RECOMMENDATION: 3. Hydro's proposed 1989 expenditures related to demand side management initiatives be accepted.

Reason: There are two primary reasons for this recommendation:

i. demand management activities represent a wise use of funds since they post-pone the need for future facilities; and

ii. it will take time to assess the impact that such initiatives can have, thus, it is necessary that these activities proceed immediately.

RECOMMENDATION: 4. If results of the Cresap final report determine that staffing levels in the Energy Management Branch are high, as suggested in the preliminary report, Hydro should concentrate on redeploying staff within the Branch so that demand side management activities can be accelerated.

Reason: The Municipal Electric Association maintains that demand side management initiatives should receive priority treatment within Hydro, given that Hydro is facing diminishing capacity surpluses and that electrical load is increasing at a greater rate than forecast.

VIII.2 Impact of Energy Management Activities on Sales

RECOMMENDATION: 1. Hydro review its energy management targets and assess the extent to which these are being met at HR 18.

Reason: There is considerable uncertainty surrounding these forecasts, as evidenced by the substantial changes in targets presented at HR 17. Nevertheless, given the importance of the demand management program in relation to DSOS and DSPS, this Board should review Hydro's demand management targets and assess the extent to which they are being met at HR 18.

VIII.3 Parallel Generation

RECOMMENDATION: 1. Hydro's parallel generation program is appropriate and should be accepted.

Reason: The stimulation of parallel generation may forestall the need for the construction of additional generating stations by Hydro and may provide Ontario with a more diversified power pool. Hydro's current program was given high marks by external witnesses.

RECOMMENDATION: 2. Hydro's approach to establishing avoided cost be accepted.

Reason: The Municipal Electric Associaiton recognizes that the concepts and methods used by Hydro to calculate avoided cost are tailored to suit Hydro's system and planning environment.

RECOMMENDATION: 3. Hydro's buy back rates should be accepted. Hydro's approach in establishing buy back rates which take into account the parallel generators capacity factor is appropriate.

RECOMMENDATION: 4. Hydro implement a competitive bidding process for parallel generation.

Reason: In recognition of the potential benefits of such an approach Hydro is currently planning to introduce a competitive bidding process.

CHAPTER IX - COST ALLOCATION AND RATE DESIGN

IX.1 Proposed Rate Structure and Cost Allocation Changes

RECOMMENDATION: 1. Hydro's rate structure changes should be implemented in the proposed form.

Reason: After many years of uncertainty, Hydro, with consultation of its customers, has arrived at a proposal agreeable to those customers and consistent with the widely accepted objectives of rate reform: fairness in the sense of cost causality/cost recovery, economic efficiency, revenue requirement coverage in the sense that rates should recover the required revenue, and public acceptability and stability.

RECOMMENDATION: 2. Hydro's proposed phase in period and proposed ten year period of rate stability be accepted.

Reason: A phase-in period followed by a period of stability allows customers to make gradual adjustments and plan for the future with increased certainty.

IX.2 Special Condition Rates

RECOMMENDATION: 1. Special condition classification rates should be eliminated with due observance of existing contracts.

Reason: Special condition rates have had very few customers in the past and are no longer necessary given that cheaper power will be available at off-peak hours under time-of-use rates.

RECOMMENDATION: 2. In any event, the Mechanical Pulping Rate should not be introduced.

Reason: Hydro has not proven that the mechanical pulping rate will speed up the conversion to mechanical pulping. Moreover, Hydro has already revised downward its projected demand for this program by one-third.

CHAPTER X - POLICY

X.1 Productivity at Hydro

RECOMMENDATION: **1. Hydro undergo external management reviews from time-to-time as part of its ongoing program to monitor productivity and performance.**

Reason: Internal cost control mechanisms at Hydro have been inadequate, while Hydro's external review (Cresap) has found significant room for improvement. Hydro's President Mr. Franklin, is in full support of external reviews.

X.2 Cresap Overview Study

RECOMMENDATION: **1. Hydro adopt and develop Cresap's corporate-wide recommendations but not at the expense of safety and reliability. These recommendations include reduction of staff levels, reduced layering, a change in corporate culture and increased approval authority at lower levels.**

Reason: Cresap has identified these areas as having significant potential for improvement.

RECOMMENDATION: **2. Hydro continue with its branch specific reviews.**

Reason: Such reviews are particularly helpful in identifying specific problem areas. For example, a specific review of the Production Branch technical and services function (PSEP), has already identified a 15% surplus of staff and other areas of potential improvement.

RECOMMENDATION: **3. Hydro improve its management audits so that they incorporate efficiency considerations in addition to effectiveness considerations.**

Reason: Hydro's Audit Division was unsuccessful in finding efficiency improvements which were subsequently identified by Cresap. Thus, Hydro's operational audits should be redesigned so that they incorporate efficiency considerations as well as those relating to effectiveness.

X.3 Staff Levels and Employment Policy

RECOMMENDATION: 1. Hydro maintain its current policy of continuity of employment, but consider an 'outplacement' service within Hydro.

Reason: The continuity of employment policy is essential to maintain morale at Hydro. But given the current surplus of staff, a program that would assist employees to find placement elsewhere would not be inappropriate.

RECOMMENDATION: 2. Hydro accelerate redeployment of staff within Hydro.

Reason: Given the current excess staff situation together with needs in other areas, (such as demand management and nuclear program), acceleration of redeployment would reduce the need for external hiring.

RECOMMENDATION: 3. Hydro reduce its labour costs by at least $200 million compared to what they would have otherwise been by 1992.

Reason: Hydro's labour costs are about $1.3 billion in 1988. With salaries 10% above community averages and staff levels 10% above required levels, a 20% savings in labour costs is not unreasonable.

RECOMMENDATION: 4. Hydro develop, at the earliest possible time, target staff levels, the achievement of which will ensure the recommended savings.

Reason: Hydro would benefit by establishing specific benchmarks for staff levels.

X.4 Other Policy Areas

RECOMMENDATION: 1. Hydro continue moving towards increased flexibility and reduced risk aversion, (except in safety related areas).

Reason: In the past, Hydro has demonstrated an excess rigidity in a variety of areas such as the borrowing program and fuel contracts. In both cases it got into contracts that were far longer and more expensive than necessary.

RECOMMENDATION: 2. Hydro not compromise its user pay concept in any way.

Reason: Hydro's mandate is to produce and deliver electricity at lowest cost consistent with safety and reliability. Any attempts to have Hydro engage in income redistribution or social engineering would be inconsistent with its mandate and inefficient from a societal point of view.

RECOMMENDATION: 3. The existing checks and balances on Hydro be recognized as sufficient and that no changes be recommended.

Reason: There are a host of regulatory and statutory checks and balances on Ontario Hydro: for example, OEB reviews, National Energy Board reviews, Public Accounts Auditor, externally appointed auditors, and 150 different types of legislation for which the Corporation is responsible. Any additional controls or restrictions would be counterproductive.

X.5 Rural Representation

RECOMMENDATION: 1. The anticipated recommendation of Special Counsel that a person be appointed to represent the interests of rural retail customers at these hearings not be accepted.

Reason: It should be rejected for two reasons. First, the appointment of a rural retail customers representatives at the hearings is inconsistent with section 37(8) of the Ontario Energy Board Act. Second, such an appointment would only promote duplication and inefficiency. Interested parties already have the right to intervene, as granted by section 37(8) of the aforementioned Act.

CHAPTER XI - OTHER MATTERS

XI.1 Costs

The Municipal Electric Association will be requesting costs in the manner outlined by the Board.

CHAPTER XII - SUMMARY

XII.1 Rate Increase

RECOMMENDATION: 1. The rate be increase by 4.9% for 1989.

APPENDIX A - RESPONSE TO CONCERNS OF NEPEAN HYDRO

RECOMMENDATION: 1. The concern expressed by Nepean Hydro be recognized but that Ontario Hydro nonetheless proceed with the proposed rate reform.

Reason: The proposed rate reform is in the interest of the common good. The evidence filed by Hydro and the other expert witnesses form a thorough and complete analysis of, and justification for, the proposed rate reform.

APPENDIX B - RESPONSE TO EVIDENCE OF DR. J. WILSON

RECOMMENDATION: 1. Dr. Wilson's recommendations regarding the directional appropriateness of Hydro's proposed rate structure changes be accepted.

Reason: They are consistent with the evidence of Hydro and special witness for the OEB, Sharon Chown.

RECOMMENDATION: 2. Dr. Wilson's evidence that there are valid reasons for implementing time-of-use rates at the wholesale level be accepted.

Reason: Valid reasons include the possibility and incentive for demand management activities at the wholesale level. In any event, 25% of the most accessible part of the load (large users) will be on retail time-of-use rates.

APPENDIX C

RECOMMENDATION: 1. Ms. Chown's evidence regarding the overall appropriateness of Hydro's proposed capacity energy split and time-of-use differentials be accepted.

Reason: Ms. Chown's evidence is consistent with that of Hydro and special witness for Consumers Association of Canada, John Wilson.

RECOMMENDATION: 2. Ms. Chown's proposals for an accelerated phase-in period, mandatory time-of-use rates, elimination of the ten year period of rate stability, and extension of the summer period by one month, be rejected.

Reason: A phase-in period following a ten-year period of stability was agreed upon by Hydro's major customers. Optional time-of-use rates were essential to the agreement between Hydro, the Municipal Electric Association and AMPCO.

RECOMMENDATION: 3. Ms. Chown's proposal to eliminate special condition rates be accepted.

Reason: Special condition rates are no longer necessary given that cheaper power will be available at off-peak hours under time-of-use rates.

RECOMMENDATION: 4. Ms. Chown's undocumented and unsupported proposal for a province-wide retail rate system and/or coincidental demand billing, be rejected.

Reason: Such a system would undermine the existing system of accountability on the part of municipal utilities for both the product (electricity) and its delivery. Attempts to "unbundle" rates have met with mixed success elsewhere.

H.R. 17

THE ONTARIO ENERGY BOARD

IN THE MATTER OF the Ontario Energy Board Act, R.S.O. 1980, Chapter 332;

AND IN THE MATTER OF a reference to the Ontario Energy Board by the Minister of Energy in respect of the proposed bulk power rates or charges of Ontario Hydro for 1989.

ARGUMENT OF THE ONTARIO NATURAL GAS ASSOCIATION

EXECUTIVE SUMMARY

July 20, 1988

SUBMITTED BY:
Christina H. Kelk
Counsel for the

ONTARIO NATURAL GAS ASSOCIATION

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The submission made on behalf of the Ontario Natural Gas Association ("ONGA") dealt only with one issue, the desirability of using natural gas as a fuel for the production of electric power.

ONGA's concern, and the reason for its presenting evidence in this hearing, was simply that evidence before the Board did not indicate that Hydro had seriously considered natural gas as a fuel source and an alternative to installing scrubbers. ONGA submits that natural gas can be an economic and reliable source of fuel for electric power generation, while at the same time providing significant environmental benefits relative to coal.

Supply

Marketable reserves of natural gas total approximately 97 TCF, which at today's production rate represents over 30 years' supply. (Exhibit 4.2.6) The Alberta Energy Resources Conservation Board estimates that Alberta alone presently has 10 TCF of marketable natural gas available in excess of present domestic and export commitments. (Undertaking 4.3.22) Long term contracts for substantial volumes of natural gas have been negotiated in recent months, and these long term contracts provide a major incentive to increase marketable reserves. Conservative estimates suggest that an additional 50 TCF of natural gas could be available from the Western Sedimentary Basin, where most of the gas is currently produced, as well as the MacKenzie Delta and Arctic Islands. (Exhibit 4.2.6) Hydro can assure itself of a secure supply of natural gas by negotiating prudent long term contracts directly with suppliers in Western Canada.

Concern was expressed during the hearing about the possible effect of the proposed Free Trade Agreement on security of supply. As pointed out in Exhibit 4.2.6 and Undertaking 4.3.22, established reserves will easily accommodate Canada's foreseeable needs, including those of Hydro should they choose the natural gas option, as well as additional exports to the United States. Legislation and regulation supporting the Agreement are now being debated and will undergo close scrutiny before the final documents are signed. ONGA believes that the "public interest" will ultimately prevail in the matter of assuring that Canada's natural gas requirements are met before natural gas is exported. (National Energy Board Act, 1959, c.46, s.83)

Price

The actual delivered cost of natural gas is a matter of negotiation, and Hydro would be in a strong position to negotiate with the local distributors and with suppliers of natural gas in Western Canada for a very competitive price. An option would be to purchase natural gas on a portfolio basis, in which case a range of prices would result which would reflect short, medium and long term contractual arrangements. The content of the portfolio could vary over time but must include sufficient long term arrangements to assure security of supply. Present options for purchase range from buying the gas in the ground for delivery at some future date to buying on the spot market for immediate short term delivery. (Undertaking 4.3.22)

Delivery

During the hearing, the time required by TransCanada PipeLines to put new pipeline capacity in service was questioned. The time involved varies according to the service required. A major facilities expansion involving the installation of large compressor units may take up to 25 months. The time for this major expansion includes two months to arrange the contract with the customer and prepare and file a facilities application, the entire regulatory procedure, delivery of the new compressor units, and installation and commissioning. If no compressor units are involved, pipeline facilities may be in place in six to nine months.

Environmental assessment proceeds along with the application itself, and so normally there is no delay involved because of this evaluation. The laying of the LDC's pipeline can proceed at the same time as that of TCPL and causes no delay since the time frame required for these lines is typically less than for those of TCPL. The actual time required at any given location will depend on the particular situation.
(Undertaking 4.3.22)

Conclusion

ONGA encourages Hydro to work with the province's natural gas utilities in a joint effort to produce competitively priced electric power, efficiently, reliably and with a minimum of environmental impact. Conversion of Hydro's existing boilers to use natural gas is only one option. Other viable options that use clean burning natural gas include combined cycle, co-firing and re-burn technologies.

IN THE MATTER OF The Ontario Energy Board Act
R.S.O. 1980, Chapter 332;

AND IN THE MATTER OF a reference to the Ontario
Energy Board by the Minister of Energy in
respect of the proposed bulk power rates
or charges of Ontario Hydro for 1989.

Final Argument of the Society of Ontario Hydro
Professional and Administrative Employees
H.R. 17

July 12, 1988

EXECUTIVE SUMMARY

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EXECUTIVE SUMMARY

The Society's Final Argument focuses on the OM&A General section of the 1989 Rate Hearing and in particular on the comparison of Ontario Hydro's salary and wage scales with those in other major Canadian utilities.

OM&A GENERAL

Recommendation

It is recommended that, as part of the annual information on community salary comparisons provided to the Board, Ontario Hydro provide comparisons of Ontario Hydro engineering salaries with those recorded by the Pay Research Bureau for the Canadian public utility sector.

Rationale

The comparison of Ontario Hydro's salaries with those of other major Canadian utilities has been identified by the Board as an issue to be dealt with in this hearing.

While external salary comparisons have been made by Ontario Hydro in Exhibit 4.1.15, no comparison was provided in the Corporation's evidence between Ontario Hydro salaries and those in other major Canadian utilities. This is an important gap which in the Society's view has to be filled.

Ontario Hydro compares its productivity and costs with other Canadian utilities and acknowledges that these utilities share its goals and objectives and have similar concerns with respect to regulation and accountability. Ontario Hydro also acknowledges that there is a closer fit between its engineering jobs and those in other major Canadian utilities than with those in the Corporation's 15-Company Survey.

The Society maintains that Ontario Hydro's engineering salaries, as a benchmark for external salary relativity for Society-represented employees, are not out of line with comparable salaries in other major Canadian utilities.

Information on engineering salaries in major Canadian utilities is readily available from the Pay Research Bureau in a form comparable to that already relied upon by Ontario Hydro and the Board in assessing external salary comparisons. It is the Society's view that this data should become part of the annual information on community salaries provided to the Board.

RESPECTFULLY SUBMITTED BY:

The Society of Ontario Hydro Professional
and Administrative Employees

ONTARIO ENERGY BOARD
HR 17

IN THE MATTER OF THE Ontario Energy Board Act,
R.S.O. 1980, Chapter 332;

AND IN THE MATTER OF a reference to the
Ontario Energy Board by the Minister of Energy
in respect of the proposed bulk power rates or charges
of Ontario Hydro for 1989

FINAL ARGUMENT OF ONTARIO HYDRO

July 20, 1988

EXECUTIVE SUMMARY

ONTARIO HYDRO

HR 17 FINAL ARGUMENT

EXECUTIVE SUMMARY

INTRODUCTION

> "We have got these tremendously talented people in Ontario Hydro, and it seems to me that we should be tapping their ideas, their innovativeness and their creativeness, ... to bring about a change in the organization and culture of Ontario Hydro in order for it to fulfil the expectations and the obligations that it's going to have, not only for today but for the future."
>
> Robert C. Franklin
> Chairman and President of Ontario Hydro
> HR 17, Transcript Page 3827

Each year's rate case develops its particular theme. In HR 16, the focus was on Hydro's founding principle - power at cost. With HR 17, the focus has turned to the future - and a transition to a more productive Corporation, better placed to meet the requirements of the Ontario community for electric service in a manner providing the greatest overall benefit to that community.

Hydro has been well tested in HR 17. In responding to the arguments filed, Hydro anticipates that this Board will both reinforce directions which it sees as desirable, and provide well-founded criticisms where improvements are suggested.

In looking forward to HR 18, Hydro endorses OEB Staff Counsel's view that the annual rate review process before the OEB should focus on matters of significance which directly affect the rate proposal. The myriad of peripheral issues should not divert the focus of the hearing.

CHAPTER 1 - ECONOMICS

Hydro submits that its forecast of key economic variables for 1989 should be accepted. It is Hydro's view that there continues to be more downward potential than upward potential for the Canadian dollar exchange rate in 1989. Recognizing the uncertainty surrounding this variable, Hydro considers 1989 values in the range from 79 to 81 cents as reasonable.

Hydro submits that its assessment of the impact of the Free Trade Agreement (FTA) should be accepted by the OEB and notes that the findings were substantially endorsed by OEB Staff Counsel, MEA and Energy Probe, while Counsel for AMPCO made no comment. Although IPPSO expressed concern regarding export competitiveness and longer term load growth, Hydro's position on the the FTA has not changed.

Hydro also suggests that the level of resources devoted to economic forecasting is appropriate, as was recently concluded by the Cresap consultants. The evidence shows that the nature of communications between Economics and Forecasts Division and other organizational units in the Corporation is satisfactory.

CHAPTER 2 - LOAD FORECASTING

Hydro's methodology and process for arriving at the short-term load forecast should be accepted. The process of model development is ongoing and is reported regularly to the OEB. As there was little criticism of the methodology used to prepare the load forecast and its update, and since there was no consistent criticism of the level of the forecast, Hydro submits that the primary sales forecast contained in Load Forecast 871214 and its updates should be accepted.

It is Hydro's view that the principle focus of the annual forecasting cycle should remain on providing timely information for the decisions required to be made by Hydro's Board of Directors. Significant efforts are made to provide the OEB with the benefit of Hydro's current outlook on these matters at the time of the rate review hearing.

CHAPTER 3 - FUEL AND FUEL-RELATED AND SECONDARY SALES

Hydro submits that its forecast of hydraulic production in 1989 of 36.2 TWh should be accepted as reasonable. Hydro requests the OEB to endorse long-term median hydraulic production values as the appropriate starting point for hydraulic forecasts in future hearings. Hydraulic forecast evidence would then focus on unusual conditions which affect the rate year.

The evidence before the OEB shows that the fundamental reason for returning Lennox units to service is one of need. Given the absence of any reliable alternative, including capacity purchases from Hydro-Quebec, the return of Lennox units was the only choice in addressing that need. Continued insistence that Hydro demonstrate the benefits of reopening Lennox on economic grounds ignores the fundamental rationale for bringing the units back into operation, that is to provide a reliable supply to customers in Eastern Ontario.

Hydro expects 1989 secondary sales of about 6300 GWh, resulting in revenues of $207.3 million. The volume of sales is increased over 1988 due to a forecasted improvement in the interruptible market together with a firm sales increase as per options in the contract with Vermont.

Hydro submits that all identifiable and applicable costs, both financial and social are included when determining the costs attributable to secondary sales. Such costs have to date included incremental fuel cost, incremental OM&A cost, social cost and, in future will include incremental cost of acid gas abatement. Hydro has initiated a major study of the social costs in support of the application to be made to the National Energy Board (NEB) for renewal of export licences. This study is scheduled for completion in 1990, and the results of the study will be made available to the OEB when the study is completed.

In general, the costs included in any secondary sales are the incremental production costs incurred in meeting these sales. Basing the price of export sales on Total Unit Energy Costs (TUEC) would not be appropriate since TUEC includes interest and depreciation charges, which are not incremental costs.

Hydro will maintain its active pursuit of purchases of energy, including contract purchases, from all utilities including Hydro-Quebec and Manitoba Hydro where beneficial. In the absence of beneficial contract terms, Hydro will continue to made advantageous purchases on a daily basis.

As they are based on operating experience, Hydro considers the reliability forecasts for its nuclear units to be realistic. Across the board changes are not anticipated in the next review and increases in some units will be likely offset by reductions in others. Accordingly, Hydro submits that the forecast nuclear reliability is appropriate.

Acid gas limits will not be exceeded as a result of retubing Pickering Units 3 and 4.

The uranium supply contracts that Hydro has with its Elliot Lake suppliers have future economic benefit and the advances associated with those contracts continue to have value. Hydro will continue to look at all of its options to deal with the longer-term over supply of uranium, and will continue to update the OEB on any further developments.

It is Hydro's position that its treatment of forecast peak demands for next winter, with respect to the restoration to operation of Lennox Unit 4, is appropriate.

Hydro submits that its treatment of the Minimum Temporarily Unusable Coal is correct, since this coal will be recovered when a generating station is taken out of service. There is no permanent loss in value to be arbitrarily written off in 1988.

Hydro's position is that the current set of programs and underlying techniques used to produce the Consistent Energy Set are sufficient and adequate for its needs, and that forecasts will not be improved nor will the response to changes be accelerated by the use of techniques such as the Simplex method.

Hydro wishes to assure the OEB that its determination of the reserve capacity requirement does not lead to excess reserve capacity on Hydro's system, and no double counting occurs. The reserve requirement is set based on the reliability performance of available capacity. Capacity which is unavailable due to scheduled outages or deratings, cannot contribute either to meeting load or to satisfying the reserve requirement, and must be treated separately for that reason. There is, therefore, no double counting.

Lennox Unit 3 will only be returned to operation if it is the optimum solution to a clearly identified need . If that decision is taken, Hydro would have no objection to reviewing all elements of the justification for that decision with the OEB.

While Hydro's contracts with its Elliot Lake suppliers for uranium concentrate are for significantly higher prices than those currently available in the world marketplace, Hydro's contracts with the Western Canadian suppliers are market price related, and have a moderating effect on the average uranium prices. With respect to coal prices, Hydro submits that many of its coal contracts have pricing arrangements which are competitive in the marketplace.

Hydro endeavors to provide the best available information on the status of its fuel supply contracts to the OEB without compromising commercial sensitivity or jeopardizing the results of its contract negotiations.

The use of natural gas continues to be one of the options that Hydro is considering to control acid gas emissions. Hydro will continue to work with ONGA members to consider economic uses for natural gas for electricity generation in Ontario.

The basis for settlement of Petrosar and the basis for terminating the USX - Cumberland Mine contract were explained and the decisions are considered prudent.

CHAPTER 4 - OM&A AND CAPITAL

Hydro submits that it has adequate planning and control processes in place to control costs. The processes are reviewed on an ongoing basis to ensure that they respond effectively to current conditions. Hydro submits that its experience with the Darlington project is not unreasonable in light of the many unusual factors which have influenced its schedule.

Hydro's current business planning process began in 1986. One of its objectives is to provide a better long-term framework within which to establish guidelines for short-term operation, maintenance and administration, capital and staff budgeting. Given that the process is only two years old, and is still evolving, Hydro recognizes that there is room for further improvement. Hydro nonetheless believes that the current business planning process has provided an improved framework within which to set budgets.

Hydro's confidence in the business planning process at its present stage of evolution is confirmed by the reconnaissance findings of Cresap, which states that "... the business planning and performance contracting processes in Ontario Hydro are among the most conceptually sound that we have encountered in electric utilities anywhere...". However, in order to identify further improvements to business planning Hydro has accepted

Cresap's recommendation to review the process. The use of the resource variation analyses will also be included as part of the review of the Business Planning Process.

Hydro staff levels are approved and updated as an integral part of the annual business planning and budgeting processes, with program requirements determining the staff levels. Similarly, the Cresap Corporate Review focused on how Hydro, can improve its overall effectiveness, not on whether staff positions can be eliminated. As Hydro accepts recommendations from the specific productivity studies currently underway or planned, staff levels will be adjusted accordingly.

Hydro's employment continuity policy is fundamental to ensuring a motivated and productive work force, but does not guarantee life-long employment. The policy provides adequate flexibility to adjust staff levels and to contract out where it makes sense to do so.

Hydro submits that suggestions that Hydro adopt separate measures for controlling regular and non-regular staffing levels are not based on the evidence. As outlined in a memo from the President, Hydro is controlling regular and non-regular staff separately. In addition, the forecast decrease in non-regular staff is for construction trades staff in the Design and Construction Branch. Hydro submits that the results of the upcoming review of the Design and Construction Branch should provide the OEB with a clear picture of the staff needs within the Branch.

Hydro will continue in its efforts to obtain value for the compensation dollar by: extending and refining performance based reward programs; enhancing individual job scope, challenge, employee involvement and commitment; and continuing to move in the direction of further aligning salaries with comparable employees through bargaining while ensuring that the Corporation can continue to attract and retain capable staff.

Hydro submits that it has made community wage correction a major issue in bargaining over the last several contracts. It is one of the three criteria that the Society has agreed will be considered when determining wage increases. Those three criteria are: internal relativity; external relativity; and general economic conditions. Hydro's evidence indicates that the gap between its salaries and those of its reference communities closed by 0.8 per cent in 1986. In 1987, with respect to the Society, the gap closed by 0.3 per cent. Since wage settlements are determined through negotiations, a predetermined adjustment simply cannot be guaranteed.

With respect to ESR salaries, the policy line adjustment is necessary to maintain internal relativity, but is only part of the overall ESR Pay for Performance Plan. That plan accommodates the worth of jobs by allowing for job evaluations and reference points on schedules, but makes salary adjustments to individuals based solely on performance of the individual. Pay adjustments for individual ESR employees are obtained only in relation to performance. The ESR pay for performance system is the exact opposite to a time progression system. The merit grid which has been developed for Hydro's ESR employees is designed to ensure that the annual salary reflects the employee's performance.

Hydro generally agrees with the comment that the differential between Hydro's wages and those of its reference communities need not provide for the same level of premiums in all staff groups. Wage increases have historically been different for the respective groups and through bargaining those differences will continue. However it must also be noted that factors such as pay equity legislation will maintain an emphasis on internal consistency in payment for jobs.

In HR 16, Hydro submitted evidence demonstrating a number of the interrelationships and trade-offs that Production Branch must consider in order to minimize long-term costs to the electricity customers. In HR 17, Hydro has submitted evidence that elaborates on the particular relationship and trade-offs involving OM&A and fuel costs. This evidence outlines the factors which affect fuel costs, and how these factors are related to OM&A or capital costs for the Generation and Integration Programs. It also describes a number of initiatives within Hydro to develop additional analytical capability and information to further assist management in making cost trade-offs. These analytical tools provide a good directional indication of the relationship between OM&A and fuel costs.

Productivity measures are an important component of Hydro's planning, budgeting and control processes. Measures have been developed and are in use in a number of units at various levels within the Corporation. However such measures cannot be relied upon to provide a precise and definitive measurement of all aspects of Hydro's or any utility's performance. Hydro intends to make appropriate use of performance measures and has accepted the Cresap recommendation to review the performance measures now being used.

Hydro submits that the contributions it makes to outside agencies are appropriate. No arguments were offered on this issue.

As submitted in Hydro's evidence the reliability of the transmission system has deteriorated over the last few years. In order to correct this deteriorating trend, Hydro has included in its Business Plan additional funds allocated to preventative maintenance for its transmission system. It is expected that this will restore maintenance to standard by 1991.

During HR.17, Hydro provided evidence on its plans to relocate various Head Office staff to space at 5000 Yonge Street in North York. This was the preferred alternative, based on economic and other considerations, to continuing to lease office space in downtown Toronto and to accommodate staff from 610/620 University Avenue. Hydro has entered into an arrangement to sell 610/620 University Avenue and to purchase property at 5000 Yonge Street. This arrangement reflects fair market values, as determined by independent appraisals of each of the properties.

Hydro submits that the Nuclear Operations Hiring Program is needed and timely. The major factors which, taken together, led to the conclusion that the approved level of staffing should be increased were; the need to overcome an unacceptable and increasing backlog of work; the need to meet increasing regulatory demands; the need to meet more stringent industry standards; the need to perform increased inspection and maintenance activities; the need to retube Pickering Unit 3 and 4 on a tight schedule; and the need to commission Darlington Units 3 and 4 on schedule.

As stated in the evidence, for some years there has been a concern that staff levels were not adequate to continue to maintain overall performance at an acceptable level in the long-term.

Over the last year, the results of external reviews by the International Atomic Energy Agency (IAEA), Operational Safety Review Team (OSART), the Ontario Nuclear Safety Review (ONSR) and the Institute of Nuclear Power Operations (INPO) each confirmed Hydro's concerns with the backlog of work, and with the need to improve existing areas such as engineering support for maintenance, analysis for root cause of significant events, and control of chemistry in the stations,

Resourcing the requirements of the Program through an accelerated redeployment program as suggested is not a solution. While some employees will be identified early enough to be available for redeployment within the Nuclear Operations Hiring Program, it is Hydro's judgment that a high proportion of these staff will not have the necessary skills and experience required to satisfy the needs of that program. The purpose of the program is to give immediate attention to the current deficiencies in plant operation. There is not sufficient time or justification to delay that effort while the Cresap Reviews are carried out.

CHAPTER 5 - BORROWING PROGRAM

Hydro's proposed borrowing program for 1989 and the method of its development and review is appropriate and acceptable. Based on the 1988-1989 Corporate Debt Management Strategy, which maximizes Canadian public market financing in the intermediate term, the borrowing program seeks to meet borrowing requirements at a minimum cost and risk to Hydro. In a special study for HR 17 it is shown that Hydro's performance on timing new issues was better than average in six out of ten years, about even in two years and below average in two years.

Hydro's planned long-term financing in 1988 is higher in both absolute and percentage terms than such borrowing in either 1986 or 1987. The 1988 Debt Management Strategy is flexible to allow an increase in the proportion of long-term financing from the target 15 per cent to 25 per cent of total borrowing, net of the refinancing of planned calls.

Hydro's 10 per cent floating rate debt target is based on an assessment that: (i) the savings from floating rate debt in the portfolio provide protection against future potential increases in short-term interest rates; and (ii) under the most likely scenario, floating rate debt provides interest cost savings. The selected floating rate debt target reflects Hydro's willingness to take on a certain amount of interest rate risk and, therefore, will necessarily be based on judgment rather than on an exact formula. The 10 per cent level is a target which the Corporation is aiming to achieve over several years.

Hydro submits that a special review of debt management performance is not warranted. Performance is monitored and reported regularly to Hydro's senior management, the Finance Committee and the Board of Directors and status reports are also filed with the OEB. Hydro's senior management is directly involved in the Corporation's debt and foreign exchange management programs. The President meets regularly with the Senior Vice-President, Finance and Services and the Treasurer to be kept informed about the borrowing program.

The borrowing program is an integral part of the business planning process. Senior management makes decisions on the appropriate levels of expenditures for Hydro and the impact on borrowing requirements is one factor taken into account in such expenditure decisions.

There is frequent communication with the Ministry of Treasury and Economics early in the quarterly debt management planning process, and annually in the determination of the debt management strategy. The Ministry of Treasury and Economics informs the Provincial Cabinet of Hydro's borrowing plan. Hydro will continue to maintain and improve this relationship which ensures effective communication with government.

Hydro's Treasury Division has a full-time economist on secondment from the Economics and Forecasts Division to provide economic data and advice to Treasury Staff. There is regular ongoing communication between the two divisions. Hydro submits that the current relationship between Economics and Forecasts and Treasury Divisions is based on an effective use of resources and appropriately reflects the differing responsibilities of the two groups.

The major factors affecting net borrowing are capital program costs and liquidity changes. The dynamic nature of Hydro's operating environment creates the potential for significant fluctuations in borrowing requirements. These changes, in addition to decisions to pre-borrow or to refinance callable bonds, will affect the pace of the borrowing program and result in swings in gross and net borrowing. Hydro foresees no difficulty in meeting its 1988 and 1989 borrowing requirements. Therefore, the potential for fluctuations in the borrowing program of the size experienced in recent years are not expected to pose a problem.

Hydro operates an active spread management program (SMP) which improves the Corporation's ability to raise new capital and reduces the cost of new issues. A special report on this program was filed at HR 17 and the evidence shows that Hydro has in place a system of management controls for the programs.

Hydro also operates a foreign exchange management program to reduce the risk from its foreign exchange exposure. The foreign exchange management policy was revised in 1988 to provide: an expansion of the target range for hedging; increased flexibility for more frequent target adjustment; a revised basis for setting the target; and the setting of a maximum time horizon of exposure to be hedged. In May 1988, Hydro hedged $1.3 billion of US dollar exposure which provided a significant degree of protection against a decline in the value of the Canadian dollar.

CHAPTER 6 - DEPRECIATION

Hydro has assessed the key determinants of service life for fossil generating stations and has concluded that a 40 year average service life for these stations is appropriate. A service life extension to 40 years for fossil stations was recommended by Hydro in HR 14. In its HR 14 report, the OEB recommended that the life extension be deferred pending the results of the Demand/Supply Options Study (DSOS). Hydro agreed with deferring the life extension of fossil stations for accounting and rate making purposes, but adopted a 40 year life for system planning purposes. Hydro also submits that any further deferral of the decision on the average service life of fossil stations would be inequitable and inappropriate.

It is important that flue gas scrubbers be available as an option to control acid gas emission in the mid to late 1990s. Approval is being sought from the Minister of the Environment under the Environmental Assessment Act to make scrubbers available as an option for three major coal stations, if required to meet acid gas emission limits. A decision to fit scrubbers or to choose them over other options has not been made. Given the broad definition of environment under the Environmental Assessment Act, Hydro believes that the scope of public and government review in the process followed under the Act will permit a thorough examination of whether scrubbers should be chosen over other alternatives. The need for a public hearing on scrubbers will be decided by the Minister of the Environment.

Hydro submits that the amount and detail of information submitted on the scrubber program is appropriate to support 1989 expenditures of $2.7 million in capital and $0.2 million in OM&A. The capital is for completion of the environmental approval process to bring scrubbers to the same degree of availability or readiness as other options for controlling emissions.

Lennox Units 3 and 4 are non-operating reserve facilities, mothballed for future use. Hydro's accounting policy for such facilities is to stop depreciation of the facilities and to amortize any estimated loss-in-value to the cost of current operations on a straight line basis over the expected non-operating period of the facilities. Loss-in-value of a facility is determined on the basis of assessments of obsolescence and physical deterioration during the non operating period of the facility and the likelihood of the facility not being needed for operation over its remaining service life.

Based on the expected return to operation of Lennox Units 3 and 4 and the extension of the average service life of fossil stations, Hydro submits that the annual amortization rate of 2.5 per cent of the capital cost of Lennox Unit 3 is appropriate. Hydro has approved the return to operation of Lennox Unit 4 for later this year. Consequently, depreciation of the unit will commence, in accordance with Hydro's accounting policy, effective on the date the unit returns to operation.

Hydro's Depreciation Review Committee (DRC) is responsible for providing formal engineering and financial review of service lives and removal costs for fixed assets, amortization rates for non-operating reserve facilities, and the estimated costs for the transportation and disposal of irradiated nuclear fuel. The Committee is not responsible for setting accounting policy, nor for determining the status of facilities as being operational, non-operational or surplus. Given the responsibilities of the DRC Hydro submits that it should not be mandatory that one of its members have a qualified accounting designation.

Hydro submits that its Irradiated Fuel Disposal Cost estimates and provisions for 1989 are appropriate. Hydro expects to update the cost estimate for the disposal of irradiated fuel in HR 18 but currently there is no sound basis on which to change the provisions.

Hydro submits that its nuclear decommissioning cost estimates and provisions, and the basic assumptions and methods with respect to nuclear decommissioning, are appropriate. Hydro submitted revised nuclear decommissioning cost estimates in support of NDC provisions in HR 16. These decommissioning cost estimates, including the contingencies and scope of the estimates, were thoroughly reviewed and were implemented for 1988. Since HR 16, there have not been changes to the main costing assumptions and methods reflected in those decommissioning cost studies.

The 40 year average service life expectancy for nuclear generating stations was established in 1981. Based on operating experience and engineering judgment, Hydro submits that the 40 year average service life for nuclear generating stations remains appropriate.

Hydro submits that the current accounting treatment of heavy water and the life of heavy water, to the year 2040 is appropriate. Because of its portability and homogeneous nature, all heavy water is placed in one in-service inventory and depreciated on a pool basis. The life of heavy water has been established based on its expected utility under the CANDU design concept. The CANDU concept is expected to remain a viable option to meet the energy needs of Ontario at least until the year 2040. Heavy water is not similar to any other components used in a nuclear plant in the sense that heavy water does not deteriorate during its service life. Also heavy water can be readily transferred from one reactor to another.

Hydro submits that the expected service lives of fuel channels at Hydro's nuclear units are based on experience and extensive evidence which supports the current lives, and are appropriate.

Hydro annually conducts a formal engineering and financial review of the service lives and removal costs of major plant components This review includes the cost of fuel channel removal. In response to the OEB's HR 16 report, Hydro accepted the OEB's HR 16 recommendation to reduce this contingency factor from 30 per cent, which Hydro felt appropriate, to 25 per cent, recognizing that the matter was ultimately one of judgment. Hydro rejects suggestions that the retubing experience at Pickering supports any further reduction in contingency from the 25 per cent recommended by this OEB in HR 16.

The current service life of irradiated fuel bays is consistent with Hydro's accounting policies. The first fuel bay is depreciated over the life of the station. Additional bays, if required, are depreciated over the estimated time it takes to fill them. Hydro submits that the current charges relating to fuel bays are appropriate.

CHAPTER 7 - NET INCOME

Hydro submits that in balancing rates, financial performance and capital availability considerations, its net income policy contributes to stable rates and financial self-sufficiency. Hydro submits that its approach to net income determination is consistent with its responsibilities and authority under the Power Corporation Act, and is consistent with government policy direction. Hydro's use of conventional financial indicators to assist in the application of judgment in determining the level of net income and associated rate increase is appropriate. Hydro submits that the proposed 1989 rate increase of 5.5 per cent, and net income of $741 million under the updated outlook, are appropriate in that they position Hydro to achieve reasonable financial performance with moderate rate increases for the next few years.

Suggestions that the proposed level of 1989 net income is too high cannot be supported in evidence. A net income of $741 million provides an interest coverage of 1.25, generally similar to the levels achieved in the period 1977 to 1984. While the $741 million is higher than any net income yet achieved in absolute terms, it is not so in relation to the revenue requirement. The updated outlook indicates that the $741 million net income will be about 12 per cent of primary revenues. A review of Hydro's Annual Reports from the early 1980s reveals that net income was also in excess of 10 per cent of primary revenues for several years: 15 per cent in 1984 and 1981, 14 per cent in 1983 and 12 per cent in 1982. Suggestions that a rate increase of 5.5 per cent is not acceptable are not supported in the evidence.

Recommendations that there be no 1989 rate increase should be disregarded. Financial performance would be weakened by comparison with Hydro's proposal. The effect of no rate increase is a very unstable pattern of rate change, with 0 per cent rate increase in 1989 and something in excess of 10 per cent in 1990, simply to meet the statutory debt retirement appropriation in that year. Hydro submits that the OEB should reject the no increase approach as being inconsistent with the achievement of smooth and stable rate patterns, and appropriate financial performance.

It is Hydro's submission that the evidence does not indicate the need for a level of net income greater than that associated with the proposal, as updated. While the existing target mechanism is appropriate for the near future it was acknowledged that a review of net income targets for the longer term was appropriate. In addition, any proposal for increased levels of net income and an accelerated decline in the debt ratio must be viewed in the context of the rates required to do so. As the Darlington units are placed in-service over the next few years, the evidence indicates that customers will be absorbing increased interest and depreciation costs through rate increases. It is Hydro's submission that an ambitious program to further strengthen the debt ratio through higher net income during this period may not be the most appropriate.

CHAPTER 8 - ACCOUNTING POLICY

Hydro submits that the accounting treatments specified by the Board of Directors for the Petrosar settlement and termination of the USX Coal Purchase Agreement are appropriate, since they recover the related costs in a reasonable manner, without unduly impacting on customer rates. These accounting treatments follow generally accepted accounting principles for companies operating a rate setting environment.

Hydro submits that revisiting loss write-off decisions every time there is a fluctuation in the expected level of net income would be an inappropriate way to conduct business. Once Hydro's Board of Directors has specified the appropriate accounting for a particular loss write-off situation, this decision is reported to customers and the financial community through Hydro's financial statements. Hydro suggests that it would be inappropriate and confusing to change the message being sent to readers of its financial statements by continually revising previous decisions in response to net income fluctuations.

The accounting treatment of heavy water production costs is appropriate. The resulting unit mass costs are reasonable and fair to customers over time.

It is Hydro's position that its accounting for uranium fuel supply advances is appropriate and prudent in the current supply environment. Hydro's accounting for these contracts has been developed within the bounds of GAAP and ensures fairness in the allocation of costs to customers. Hydro further submits the contracts continue to provide Hydro with the benefit of a future secure supply of uranium concentrate. This benefit sustains the carrying values of the associated advances. Departing from Hydro's present accounting would jeopardize intergenerational equity.

Hydro's accounting for components of a major fixed asset is consistent with its policy on the depreciation of major fixed assets. The policy requires that the costs of a major fixed asset be allocated on a straight-line basis to all time periods within the asset's service life. Where major components of a plant have shorter lives than the plant and therefore have to be replaced, each component is depreciated up to the in-service date of its replacement in order to maintain the continuity of depreciation charges for the total plant over its service life. Removal provisions are an element of service cost under Hydro's depreciation policy and therefore are recovered over the same periods as the related component is depreciated. Hydro's treatment of components recognizes that they are not independent of the major asset unit and therefore, the service lives of the series of original and replacement components should be a continuum equal to the service life of the major unit.

It is Hydro's position that the disclosure currently given to decommissioning costs is adequate. It is Hydro's view that a funded reserve for decommissioning costs is not required at this time although it is Hydro's intention to regularly monitor this position.

Hydro submits that its proposed accounting treatment for the exchange of 610/620 University for the property at 5000 Yonge Street is an appropriate application of accounting principles. Given the nature of this transaction, it is appropriate to account for it as an exchange of like-use assets. This accounting treatment is in accordance with GAAP and is applicable to both regulated and non-regulated companies.

It is Hydro's position that continuing to capitalize the interest incurred during Darlington's construction period results in the best matching of costs and benefits to customers whether or not there are construction delays. Phasing out interest capitalization prior to a new facility's in-service date is an acceptable alternative for accounting purposes if it is authorized by a formal rate ruling. In Hydro's view, however, this treatment should only be applied where the rate impact of placing a new facility in-service is unacceptably severe and cannot be moderated through more traditional means such as those provided by Hydro's net income policy.

CHAPTER 9 - ENERGY MANAGEMENT

Hydro has accelerated the introduction of activities designed to reduce demand for electricity and has increased its long term targets to the year 2000.

The key principles which underlie these activities are; a focus on customer satisfaction; economic justification of Hydro's energy management initiatives; and avoidance of the pursuit of conservation for conservation's sake or building load for load building's sake.

Hydro's target to the year 2000 is 5500 MW of peak demand reduction. This is comprised of 1000 MW of load shifting, 3500 MW of efficiency improvements and 1000 MW of parallel generation. Although these are ambitious targets, which represent a major challenge for the Energy Management Branch over the next few years, Hydro is committed to their achievement.

Hydro measures the actual load impacts of programs against their targets and measures all programs against their stated objectives. Hydro has improved its ability to measure the impacts of its energy management programs and will continue to develop its models, tools and expertise in this area.

The total cost to Hydro for its energy management initiatives to the year 2000 is anticipated to be in the range of $3 billion.

Hydro submits that there is no evidence before the OEB to support the suggestion that the OEB be given the mandate to more thoroughly investigate the relationship between Hydro and the municipal utilities at next year's hearing. Hydro submits that the current working relationship which encourages cooperation and dialogue with the utilities works well.

Most of Hydro's incentive programs for energy management are directed to load reduction, load shifting and parallel generation. In some instances, incentives could be applied to applications where load growth may result. In keeping with Hydro's focus on customer satisfaction and managing the whole demand, if a technology or process is in the customer's interest, that is, its implementation will make the entire process more efficient, Hydro will advise and support the development of that technology.

Hydro has a Corporate policy to purchase power from private power producers in Ontario. Hydro believes that parallel generators can introduce flexibility and diversity in providing electricity. Hydro is determined to make the working relationship with parallel generators as productive and beneficial as possible. The evidence clearly demonstrates that Hydro has a serious interest in parallel generation, recognizes the value of parallel generation to the electricity supply system and is actively promoting its development.

Based on the pace of developments in the parallel generation area, and the lack of substantial evidence by the intervenors to support the need for a public hearing or other third party intervention, Hydro submits, as it did in HR 16, that the option of imposing a regulatory and public hearing process is not necessary.

Hydro's position on buy-back rates has not changed since HR 16 and will continue to be that the current rates are appropriate and offer an incentive to parallel generators. Hydro considers that its methodology for deriving the rates is justified and appropriate.

Hydro's position is that the Standard Contracts in use enjoy a general acceptance in the parallel generation industry. Private generators have a valuable contribution to make in the development of both technical and commercial standards. Therefore, Hydro intends continuing its current practice of amending standard contracts for projects up to 5 MW to reflect the changing need of the industry and of individual projects. For projects above 5 MW, project specific contracts are negotiated.

As the evolution of the parallel generation industry continues, targets for parallel generation will be adjusted to accommodate the increased interest shown, timeliness and viability established by proponents and Hydro via joint studies, and operating experience. Hydro is also developing a competitive proposal process to increase the opportunities for industry in supplying power to Hydro.

CHAPTER 10 - COST ALLOCATION AND PROPOSED RATES

Hydro's 1989 rate proposal incorporates the first step in a planned four-year implementation of a new costing and pricing system. The objectives behind the proposed revisions have been widely accepted and include; rates should recover the annual revenue requirement; rates should be fair - broadly defined as those which track costs and assign equal treatment to equals based on cost causality, to the extent feasible and practical; rates should encourage efficient use of facilities and resources in the production, distribution and consumption of electricity so as to minimize costs to Hydro customers over the long term; and rate structures should be publicly acceptable and comprehensible, and should be stable and feasible in application.

The rate reform proposal reflects a consensus reached by representatives of Hydro, the MEA and AMPCO on the Ad Hoc Committee. A Memorandum of Understanding signed in January 1988 addresses the OEB's requirement that Hydro obtain greater customer acceptance for any proposed rate reform.

Hydro believes that the rural customer interests were adequately protected in the Ad Hoc Committee by the three participants. It is important to underscore the practical problems that formal representation of diverse rural interests involves. Hydro's experience shows that there is no single rural interest, and using one representative to balance the broad range of these interests fairly is difficult.

Hydro's target costing and pricing structure is generally supported by the external expert witnesses and includes: a capacity:energy split of 42:58; demand and energy rates for large users in municipal utilities and direct customers of Hydro that are time-differentiated on both a seasonal and a time-of-day basis; an option, whereby utilities can choose to be billed on time-of-use or non time-of-use rates; and the introduction of a diversity adjustment mechanism to eliminate any differences between the rates for municipal utility large users and Hydro's direct customers other than those attributable to local or customer specific costs.

The implementation strategy calls for the target costing and pricing structure to be phased-in over the period 1989-1992. For 1989 rates, the proposal is to fully implement all of the above features except; common costs will be allocated to customers based on a 45:55 capacity:energy split (5/8's of the target); and the rating period differentials used to time-differentiate common costs will be set at approximately 5/8's of the target values.

Once the rate proposal is fully implemented, Hydro proposes maintaining a period of ten year stability for the costing and pricing structure, such that rate structure changes will not be made unless conditions indicate that they are truly warranted.

The division of common costs into capacity and energy related components has been an area of much dissension in past hearings. It is significant that most parties agree with Hydro's target capacity:energy split of 42:58.

All capacity costs will be allocated based on peak period load with the winter unit cost higher than the summer unit cost. The average winter unit energy costs will be higher than the average unit summer costs; and the winter and summer daily peak period costs will be higher than their respective off-peak period energy costs. Summer consists of the months April through September inclusive, with winter being the remaining months of October to March. The peak period in each season extends from 7 am to 11 pm, Monday to Friday, except for public holidays. All other hours are off-peak.

Hydro has explained the implementation of the proposal to the municipal utilities and considers the proposal is fair to them, particularly given the optionality clause.

The benefits of the rate proposal do not depend on extending time-of-use pricing to all retail end-users. The retail rate setting process carried out in conjunction with the municipal utilities is operating satisfactorily and a special retail rate reference is not necessary.

Hydro proposes to continue to offer Special Condition Classifications (SCC) in 1989. SCC rates are designed to encourage load, which would not otherwise have occurred, during periods when surplus base load generation is available. Special condition rates are cost-based in that they recover incremental costs and also make a contribution to net revenue.

CHAPTER 11 - GENERAL POLICY

Hydro has retained the Cresap management consulting firm to assist Hydro management in a comprehensive and systematic examination of the efficiency and effectiveness of the organization. A Corporate overview study prepared by Cresap identifies opportunities for productivity improvement in a number of branches and for the Corporation as a whole. Hydro, with the assistance of Cresap, will undertake a number of studies and productivity programs over the next two years, beginning with the Regions, Design and Construction and Energy Management Branches. These are in addition to the program currently under way in the Production Branch.

Hydro is concerned that many participants in this year's hearing incorrectly view the effectiveness and efficiency reviews simply as a staff reduction program. The focus of these studies is primarily to review the work that is being done and the manner in which it is performed. It is expected these reviews will result in the elimination of tasks deemed to be less productive through the redeployment of Hydro staff to more productive tasks. The reviews do not have a reduction in staff levels as their primary objective, although Hydro expects that changes resulting from the reviews will reduce the number of staff required to carry out approved programs by about 2000 from what it would otherwise have been.

Hydro expects that the Cresap reviews will be a matter of major interest in next year's hearing. Hydro will be prepared to file information on their status and impact on rates for 1990 at that time.

Hydro is fully accountable. As stated by Mr. Franklin in his evidence; "I think the present situation, present structure, has served this Province well, as one of the premier utilities, electrical utilities in the world. It didn't come about by accident. I think there are checks and balances on the system already."

These checks and balances include: the OEB rate reviews; a Board of Directors, which is a public citizens board, appointed by the Government; the Select Committee; 150 different types of legislation to which Hydro is responsible; externally appointed auditors; the public accounts committee; environmental assessment reviews; National Energy Board reviews; and health and safety and labour legislation.

Hydro aims to keep rate increases at or below inflation over the next ten years. This objective is useful both in achieving high productivity and as a signal to customers regarding the long term direction of electricity prices. As discussed in the Corporate Strategy document, this objective may from time-to-time have to be traded-off against the others, such as program requirements or financial soundness objectives.

CHAPTER 12 - COSTS

Hydro recognizes that EBO-116 is currently the guiding principle for the awarding of costs in OEB proceedings. In that report of the Board, it was concluded that intervenors should be eligible for costs if they met certain criteria. These criteria require that an intervenor:

- "has or represents a substantial interest in the proceeding to the extent that the intervenor or those it represents will be affected beneficially or adversely by the outcome;
- participates responsibly in the proceeding; and
- contributes to a better understanding of the issues by the Board." (EBO-116 Report, page 187)

Hydro supports the continued application of those criteria.

CHAPTER 13 - RATE RECOMMENDATION

After carefully considering all intervenors' arguments, Ontario Hydro submits that the rate proposal filed April 19, 1988, remains reasonable. The evidence in HR 17 with respect to rate reform, the expected pattern of costs for the rate year and beyond, and the balance between rate and financial performance considerations, supports the conclusion that the proposed rate increase of 5.5 per cent, and the associated rate structure, are appropriate.

Appendix G

Glossary of Terms

GLOSSARY OF TERMS

ACID RAIN	A general term describing precipitation that has been acidified by the presence of atmospheric pollutants.
ATOMIC ENERGY OF CANADA LIMITED (AECL)	A Crown Corporation created in 1952, under the provisions of the Atomic Energy Control Act, to undertake research and to develop uses for nuclear energy.
AT-WILL PURCHASES	Purchases of power supplied on an occasional or at-will basis by the generator.
AVERAGE MEGAWATTS	The energy produced or consumed in MWh, for a period of time, divided by the number of hours in the period.

AVOIDED COSTS	The average costs which Ontario Hydro can avoid in the event of an increase or decrease in the demand for electricity when private electricity generation displaces Hydro's own generation.
BULK ELECTRICITY SYSTEM (BES)	The generation system, the transmission system and all facilities installed for their control or protection.
BASE LOAD	The minimum normal load consumed during a specified time period, usually a day.
BULK POWER COSTS	Hydro's total annual cost of operating, maintaining and administering the BES.
BUY-BACK RATE	The rate which Ontario Hydro pays to purchase power from independent producers.
CALANDRIA	A cylindrical reactor vessel in Candu reactors which contains the heavy water moderator and the tubes containing the uranium fuel. The reactor core

	consists of all of the components within the calandria.
CANDU	A Canadian-developed nuclear power reactor system. The name is derived from CANada - Deuterium - Uranium, indicating that the moderator is heavy water, and that the fuel is natural uranium.
CAPABILITY	The maximum load that a station or equipment is capable of carrying under specified conditions.
CAPABILITY FACTOR (Cbf)	The ratio of the energy which could have been delivered by a generating source over a period of time, (if there were no problems or restraints external to the source), to the energy which would be delivered if the source operated continuously at the Maximum Continuous Rating over the period.
CAPACITY	In the electric power industry, this word has two meanings: 1. Power, that is, the rate of delivery of energy. For example,

	a utility might sell 50 megawatts of capacity, i.e. of power. 2. The maximum quantity of power that some piece of equipment is capable of carrying. For example, a generating unit might have a rated capacity of 50 megawatts.
CAPACITY FACTOR (CF)	The ratio of the energy delivered by a generation source over a period of time, to the maximum energy which would be delivered if the source operated continuously at the Maximum Continuous Rating over the same period of time.
CAPITAL PROGRAM COSTS	The costs of the construction and commissioning of capital facilities, including the interest associated with financing during construction, major modifications to these facilities, the production of heavy water, training costs, and the purchase of minor fixed assets.
CASH FLOW COVERAGE RATIO (CFCR)	A financial ratio that measures the extent to which funds from operations cover interest payments. It is also a measure of fixed charge coverage. It

	is defined as the ratio of internally generated cash flow plus interest costs charged to current operations to gross interest costs.
COGENERATION	The combined production of electricity and useful heat. Cogeneration is often employed at industrial plants where the heat produced can be utilized in the manufacturing processes and for general space heating. Cogeneration facilities use significantly less fuel to produce electricity and thermal energy than would be needed to make the two separately.
COINCIDENT PEAK	The maximum peak demand of all customers occurring at the same time. When the maximum or system peak occurs, not all loads on a power system reach their maximum value at this same time. The sum of these individual customer peaks, occurring at different times, constitutes the "noncoincident peak". The coincident peak of the system is invariably less than the noncoincident peak.

CORPORATE BURDEN	The corporate cost of providing benefits to employees.
COST ALLOCATION	The cost allocation process separates Hydro's revenue requirement components into common, non-common and rural distribution functions, and subsequently allocates these groupings of costs to rate classes.
COST ESCALATION	The increase in costs over time usually expressed as a compound rate or as an index.
CURRENT	The flow of electricity through a conductor, measured in amperes.
CUSTOMER CLASSIFICATION	The segmentation of Hydro's customers for purposes of cost allocation. (Distributors, comprised of the individual municipal utilities and the distributing companies; and the Power District, which services the direct industrial and rural retail customers).

DERATING ADJUSTED FORCED OUTAGE RATE (DAFOR)	A refinement of the Forced Outage Rate in that it includes the effects of forced deratings. The effect of such a partial loss of capability is included by calculating its equivalent full outage time and adding this to the forced outage time.
DEBT RATIO	The ratio of debt to total capital. It is a measure of financial soundness and focuses on the long-run financial and operating structure of the corporation.
DECOMMISSIONING COSTS	The costs of transforming an in-service facility into a safe and socially acceptable, permanently out-of-service state.
DEMAND	The load consumed by a customer, a group of customers, or a system in a stated period of time such as a month or a year.
DEMAND CHARGE	The component of a two-part price for electricity based on a customer's highest demand for power in a specified period, usually a month. The other

	component of the two-part price is the energy charge.
DEPRECIATION	The gradual exhaustion of the service capacity of fixed assets which is not restored by maintenance practices. It is the consequence of such factors as use, obsolescence, inadequacy and decay.
DISTRIBUTORS	Refers collectively to municipal utilities and the Power District. The Power District is subsequently divided into two customer classes, rural retail and direct industrial customers.
DIVERSITY	The phenomenon of differing maximum loads being experienced at different times. The demands represented by such loads are said to be "noncoincident". Diversity results in the total peak demand on a power system being less than the sum of all its individual load peaks.

EAST SYSTEM AND WEST SYSTEM	The division of Ontario Hydro's facilities using a line which runs roughly north-south, intersecting the transmission circuits which join Marathon and Wawa, just west of the Wawa Transformer Station.
ECONOMY ENERGY	Energy sold by one power system to another to effect a saving in the cost of generation when the receiving party has adequate capability to supply the loads on its own system.
EMBEDDED COST OF DEBT	The weighted average cost of outstanding long-term debt.
EMISSION LIMIT	The maximum level of substances or energy allowed by law to be released into the environment e.g., sulphur dioxide, noise, heat, radiation.
ENERGY	The capacity for doing work. It is equal to the average power that the system can sustain over an interval, multiplied by the time duration of the interval. Energy is typically reported

	in kilowatt - hours (kWh) or related units: 1 megawatt-hour (MWh) = 1000 kWh 1 gigawatt-hour (GWh) = 1000 MWh 1 terawatt-hour (TWh) = 1000 GWh
ENERGY CHARGE	The component of the price for electricity which is based on the amount of energy taken.
ENERGY COSTS	For a customer, energy cost is that portion of the bill which is based on energy usage. For the power supplier energy costs represent the costs incurred to meet its customers' energy requirements.
ENERGY DEMAND	This is the average energy required to supply a load over a stated period of time.
EQUITY	Represents the amount invested in the electricity system, which has been contributed by customers in the form of net income or invested by the Province of Ontario.

equity
= equities accumulated through debt retirement appropriations
+ reserve for stabilization of rates and contingencies
+ contributions from the Province of Ontario as assistance for rural construction

EXCESS CAPACITY	The amount by which installed operational capacity exceeds required capacity including an appropriate reserve margin.
FINANCIAL SOUNDNESS	The ability to meet financial obligations and to withstand situations that have potential adverse financial consequences.
FIRM LOADS	Loads to be supplied to a customer whenever required provided physical equipment permits.
FIRM POWER	Electric power available to be used by the purchaser at all times during the period of the contract.
FORCED DERATING	An unplanned partial reduction from the Maximum Continuous Rating in the

	available power generation, due to constraints internal to the source.
FORCED OUTAGE	An unscheduled or unplanned outage whose starting time is not postponable beyond the weekend following the occurrence of its initiating cause.
FORCED OUTAGE RATE	The percentage of exposure time on forced outage in a specific time interval.
FROZEN RESERVE	An operating facility where staff levels are reduced to operate fewer units for a temporary period of time. The units are maintained in a state of readiness for full operations on short term notice.
FUEL BUNDLE	An assembly of metal tubes (referred to as pencils) containing cylindrical nuclear fuel pellets ready for insertion into a reactor.
FUELLING RATE	The rate at which fuel must be fed to a boiler or reactor in order to produce

	the desired level of electrical output from the turbine-generator.
GENERALLY ACCEPTED ACCOUNTING PRINCIPLES (GAAP)	Those accounting principles which have been established in a particular jurisdiction by formal recognition by a standard setting body, or by authoritative support or precedent.
GENERATING STATION	A station consisting of one or more generating units for the production of electricity. Hydro's main types of generating stations are hydroelectric, nuclear, and fossil-fuelled (coal, oil or natural gas).
GIGA	A prefix used to indicate a billion units of a certain quantity. One GW of power is equal to one billion watts or one million kilowatts of power. One GWh of energy is equal to one billion watt-hours or one million kWh of energy.

GROSS INTEREST	The interest and amortization of bond discount on bonds payable +interest on notes payable +interest on bank loans +interest on other long-term debt +interest on accrued provisions +foreign exchange on bond interest payments -amortization of gain/(loss) on premature retirements
HEAVY WATER	A form of water composed of deuterium and oxygen, instead of hydrogen and oxygen. It is used in CANDU reactors as a coolant and/or moderator.
INCREMENTAL GENERATING COST	The cost of generating one additional unit of electrical energy above a previously determined base quantity.
INTER-CONNECTION AGREEMENT	An agreement made between two power utilities to govern the operation of interconnections between their systems. Typically such an agreement defines different classes of inter-utility transfers and specifies how they shall be priced between the two companies.

INTERCONNECTION STANDARDS	The methodologies and means to be used in connecting generating plants to either the utility grids or private grids.
INTERCONNECTED SYSTEM	A system consisting of two or more individual power systems connected together by tie lines
INTEREST CAPITALIZATION RATE (ICR)	The rate applied to determine financing costs associated with fixed assets under construction and which will be capitalized.
INTEREST CAPITALIZED	The portion of gross interest associated with the financing of assets under construction (including heavy water production) and unamortized advances for fuel supplies.
INTEREST COVERAGE RATIO	The ratio which measures the extent to which net income covers gross interest payments. Hydro uses two interest coverage ratios. The first, referred to as the level of interest coverage ratio or simply the interest coverage ratio, is defined as the ratio of net

	income plus gross interest, to gross interest. The second, the quality of interest coverage ratio, is defined as the ratio of interest costs charged to current operations to gross interest. These ratios consider the extent to which fixed charges are covered by operating income.
INTERRUPTIBLE LOADS	Loads supplied at a lower price because they may be interrupted under the terms of the contract.
IRRADIATED FUEL	Used nuclear fuel whose fissionable isotopes have been partly consumed and which has accumulated fission-product poisons to such an extent that it can no longer sustain a chain reaction.
KILOWATT (kW)	A measure of power, equal to one thousand watts. A kilowatt is approximately equal to one and one-third horsepower.

KILOWATT HOUR (kWh)	The commercial unit of electric energy equal to 1000 Wh. The amount of electricity consumed by ten 100 W light bulbs burning for one hour.
LEAD TIME	The period between the start of planning for a project and the in-service date of the plant.
LOAD	The amount of electric power or energy consumed by a particular customer or a group of customers. Load differs from demand. Since load is measured at the customers' delivery point and is equal to the demand less transmission losses.
LOAD FACTOR	The ratio of the average load during a designated period to the peak or maximum load in that same period. (Usually expressed in percent).
LOCKED-IN ENERGY	Energy which cannot be delivered to the Bulk Electricity System due to a mismatch between the generating capacity at a site and the capability of the available transmission to

deliver the energy. When more energy can be generated at a site than can be carried away by the available transmission, the output of some of the generating units must be reduced. This is defined as locked-in energy.

MAINTENANCE OUTAGE	An outage whose starting time cannot be postponed from one season to another but when the outage is required can be postponed beyond the next weekend.
MAINTENANCE OUTAGE FACTOR (MOF)	The percentage of time on maintenance outage in a specified period.
MAJOR UNFORESEEN CORRECTIVE MAINTENANCE (MUCM)	Budget allocation for expected but undefined maintenance expenditures.
MAXIMUM CONTINUOUS RATING (MCR)	The gross or net maximum electrical output (in megawatts) for a generator operating continuously.

MEDIAN STREAMFLOW	The median of all recorded flows in a river during a specified period.
MEGA	A prefix used to indicate a million units of a certain quantity. A MW is equal to a million watts of power and a MWh is equal to a million Wh of energy.
MILL	The one thousandth part of one dollar.
MONOPSONY	A market situation in which there is one buyer of a good or service.
MOTHBALLED	An in-service unit that has ceased operations and is placed in a condition that ensures its safe storage during a period when it is no longer required for energy production or operating reserve purposes.
NET INCOME	The residual amount remaining after deduction of all expenses from revenues.
NET INTEREST	Referred to as "interest" in the Statement of Operations, represents the

	interest costs attributable to the debt used to finance the assets in-service. net interest = gross interest - interest charged to construction in progress - interest charged to heavy water production - interest charged to unamortized advances for fuel supplies - interest charged to fuel for electric generation - interest earned on investments
NON-CURTAILING STEAM	Steam which could not be used to produce electricity, either because it is in excess of the rating of the electrical generator or because there is insufficient transmission to take the power from the Bruce site to the BES.
NUCLEAR ENERGY	The energy released by a nuclear reaction such as fission or fusion.
NUCLEAR POWER	Power generated at a station where the energy to make steam to drive the turbines is produced by a nuclear reaction.

NON-OPERATING RESERVE FACILITIES	Facilities which are shutdown or mothballed for future use.
NUCLEAR PAYBACK AGREEMENT	Payback arises from the Pickering Agreement between Ontario Hydro, Atomic Energy of Canada Ltd. and the Province of Ontario. The three parties to the Agreement shared the capital cost of constructing the nuclear-fuelled Pickering Units 1 and 2. The payback represents, in a broad sense, the net operational gain of having electricity generated by Pickering Units 1 and 2 instead of at the coal-fuelled Lambton Generating Station.
OUTAGE	When a system element is separated from the system as a result of a fault or other cause. An outage may not necessarily result in a load interruption.
PARALLEL GENERATION	Any form of electric power generation located in Ontario which is owned by others and is connected either directly or indirectly to Ontario Hydro's power system.

PEAK DEMAND	The maximum demand consumed by a customer, a group of customers, or a system in a stated period of time such as a month or a year. The value may be the maximum instantaneous demand or more commonly the average demand over a short interval of time such as one hour.
PEAK LOAD	The maximum load occurring during a specified period of time. It may be an instantaneous value or the average for a defined short time interval. The peak load of a system is the maximum coincident total of all customer loads.
PEAK LOAD GENERATION	Electric power produced during the daily peak load periods.
PEAK POWER	The maximum rate of delivery of energy sustained over an interval of time.
PEAKING UNIT	A generating unit intended to be operated intermittently to supply peak loads.

PLANNED OUTAGE	An outage whose starting time can be postponed from one season to another. This type of outage includes periodic major overhauls.
PLANNED OUTAGE FACTOR(POF)	The percentage of time spent on planned outage in a specific time interval.
POWER	The rate of generating, transferring or using electric energy, expressed in watts (W) or the following related units: 1 kilowatt (kW) = 1000 watts 1 megawatt (MW) = 1000 kW 1 gigawatt (GW) = 1000 MW
POWER PURCHASED	Represents firm and interruptible purchases of power from other systems.
POWER SYSTEM	All the interconnected facilities of an electrical utility. A power system includes the generating stations, transformers, transmission lines, substations, distribution lines, and circuits to the customers' premises.

	In short, a system consists of all the facilities required to provide electrical service to the customers.
PRESSURE TUBES	Tubes which house the fuel bundles containing uranium. They must be designed to withstand the circulation of high pressure coolant. They are positioned inside the calandria and are immersed in the moderator.
PRIMARY SALES	The electricity which is delivered to the contracted "firm" and "interruptible" loads within the Province.
RATE OF RETURN ON EQUITY	The net income of the utility expressed as a percentage of the amount of equity invested in Hydro.
REVENUE REQUIREMENT FOR PRIMARY SALES	The revenue that must be collected from customers to meet Hydro's costs including net income, less secondary sales revenues. Other costs include operation, maintenance and administration (OM&A), fuel and fuel-related, depreciation, and

interest and foreign exchange.

revenue requirement
= costs as per statement of operations
+ net income requirement
- revenues for secondary sales

SCRUBBER	A device for the removal of entrained liquid droplets, dust, or an undesirable gas component.
SECONDARY SALES	Power surplus to primary system requirements usually provided at the convenience of Ontario Hydro to interconnected utilities.
SPLIT SAVINGS	A widely-used formula for the pricing of energy, especially economy energy sold by one utility to another, in which the total saving resulting from a sale is split equally between buyer and seller.
SPOT PRICE	The price of a fuel, purchased on the spot market. A spot market is a commodity market in which transactions are not covered by previous contractual commitments and are struck on an "ad hoc" basis.

STABILITY	The ability of power systems to remain in synchronism.
STRETCH STEAM	This is steam which is available to the Bruce Bulk Steam System as a result of planned overdesign of the reactors and boilers at Bruce NGS-A. The plant was designed with the intention of producing high grade steam for purposes other than electricity production.
SYCHRONISM	The necessary condition of interconnected alternating current generators being "in phase", that is, timed, so that their voltage waves reach the maximum and minimum values at exactly the same instant.
TARGET NET INCOME	Currently, as announced by Hydro, a level of net income in any year sufficient to achieve a coverage of 1.05 on interest charged to operations combined with a coverage of 1.50 on interest capitalized, and a cash flow coverage ratio above 1.0.

TERA	A prefix used to indicate one trillion units of a certain quantity. One TW is equal to one trillion watts of power and one TWh is equal to one trillion Wh of energy.
THERMAL GENERATING STATION	An electric generating station where the turbines are driven by gases or steam produced by burning fuels or by nuclear processes.
TRANSMISSION LINE	A line used for the transmission of electric power at high voltage.
TRITIUM	A radioactive isotope of hydrogen which is a by-product of the nuclear reaction. It is produced in heavy water reactors by neutron capture of deuterium.
UNALLOCATED LOAD	An amount, determined by judgment on the basis of model predictions and experience, which is applied to the regional estimates in order to arrive at the forecast sum of customers' loads. Its purpose is to reduce forecast error.

VOLTAGE (V)	The electrical force or potential that causes a current to flow in a circuit.
WATT	The scientific unit of power. Defined as the rate of doing work at one joule per second.
WHEELING	The transmission of power belonging to one utility through the circuits of another utility for delivery either to a third party or back to the originating system.